

Midland Energy Hub Regional Report

Low Carbon Environmental Goods and Services Market Snapshot

Midlands Energy Hub
2017/18 to 2019/20

Final Report March 2021
kMatrix Data Services Ltd



Disclaimer

kMatrix

This information is provided to help the client identify opportunities in current and future Low Carbon Environmental Goods and Services (LCEGS) markets.

It does not constitute advice to the client as to what they should do, when, where or with whom.

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Midlands Energy Hub

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Project Overview

The Low Carbon and Environmental Goods and Services sector study was commissioned by Nottingham City Council on behalf of the Midlands Energy Hub, sponsored by the Department of Business, Energy and Industrial Strategy (BEIS), and its stakeholders across the Midlands including the Local Enterprise Partnerships (LEPs) and Local Authorities.

The study was commissioned in November 2020 and awarded to kMatrix Data Services Ltd and Sustainability West Midlands, with the aim of understanding the current state of the sector, where support is needed to help grow the sector across the Midlands from a Local Authority level to a regional level and the role the sector can play to drive a low-carbon recovery from Covid-19.

The UK has a clear commitment to clean growth, where the economy continues to grow while reducing greenhouse gas emissions. The commitments are set out in the Industrial Strategy and the Clean Growth Strategy. The UK has a strong record of clean growth, cutting carbon emissions by 42% between 1990 and 2015, while experiencing a 67% increase in GDP during the same period, in contrast to the G7 emissions reduction of 3% and GDP increase of 61%¹. This has been achieved through a variety of strategies including improved energy efficiency, increased recycling of waste products and improved automobile engine technology, with the largest contribution in reduction of emissions from the decarbonisation of power. The UK now has the largest installed offshore wind capacity in the world².

Although the UK is arguably a world leader in clean growth, there is an ongoing need for further development across multiple sectors to deliver on the low carbon economy commitments both local and central government are pursuing. LEPs in the Midlands are fully cognizant of the need to support and further develop the green economy, as set out in their Energy Strategies and Local Industrial Strategies.

The study is grounded in evidenced data provided by the kMatrix big data analytical tool, which has been used to inform the nature of the sector across the Midlands region, in a number of sub-sectors. The data has been used alongside desk research, documentation review, stakeholder engagement and collaboration with partners and the awarding authority to produce a series of reports constituting an evidence base of both quantitative and qualitative evidence. This evidence not only informs policy recommendations as an integral part of the study, but also acts as a baseline from which progress can be measured post Covid-19 and into the future.

The study involved the production of a quantitative evidence base led by kMatrix and a qualitative evidence-base led by Sustainability West Midlands with findings from each workstream enriching the evidence of the other. By full collaboration between partners, the project steering group and stakeholders, the evidence base produced by the project delivers a comprehensive overview of the LCEGS market, with detailed information at the LEP and Local Authority levels. The wider relevance to the green recovery and national commitment to net zero by 2050 have been considered throughout the work and are integral to the policy recommendations and growth forecasts made during the study.

¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf

² <https://gwec.net/global-figures/global-offshore/>

Report Introduction

This report is one of a series which quantify the LCEGS sector for the MEH as a region and from the perspective of the nine LEPs which comprise the MEH. The data in this report are produced using the kMatrix Big Data Analytical Tool, with full methodology paper delivered to the MEH.

The Regional analysis of the LCEGS sector, at the Local Authority level only includes limited LEP-level data, for the purposes of growth rate comparison. The majority of LEP-level data (also at Local Authority level) are provided in separate reports. The reason for this delineation is the presence of some Local Authorities in more than one LEP, for example Hinckley and Bosworth is served by both Coventry and Warwick LEP and Leicester and Leicestershire LEP. Likewise Bromsgrove, Redditch and Wyre Forest are all served by both Greater Birmingham and Solihull LEP and Worcestershire LEP. The purpose of the data at the LEP-level is to provide the individual LEPs with a snapshot of the LCEGS sector within the geographical area they serve, regardless of whether the Local Authorities within their boundaries are also served by other LEPs. To avoid the issue of double counting, the data at the Regional and LEP-level have been segregated, except for limited LEP-level data being available in the Regional report for growth rate comparison.

Alongside the data evidence-base is a qualitative evidence base including literature review and stakeholder engagement with 1-2-1 interviews and workshops. Both the data produced by kMatrix and the qualitative findings of Sustainability West Midlands have fed into the research and production of all reports.

The full list of reports available through this project include:

- Midlands Region Low Carbon Environmental Goods and Services Market Snapshot
- Black Country Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Coventry and Warwick Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- D2N2 Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Greater Birmingham and Solihull Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Greater Lincolnshire Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Leicester and Leicestershire Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Marches Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Stoke and Staffordshire Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Worcestershire Local Enterprise Partnership Low Carbon Environmental Goods and Services Market Snapshot
- Midlands Energy Hub Low Carbon Environmental Goods and Services Covid Impact Report
- Literature review & excel spreadsheet
- Stakeholder report
- Low Carbon Environmental Goods and Services Recommendations Report
- Midlands Energy Growth Forecast, Low Carbon Environmental Goods and Services Growth Forecast for Net Zero 2030 and 2050

Local Authorities within the MEH Region

This report includes local authority-level data, to allow deep disaggregation within the LEP area. For clarity of data visualization, the names of many local authorities have been shortened. The formal names and shortened labels of the local authorities within MEH Region are listed below:

Formal name	Shortened label
Amber Valley DC	Amber Valley
Ashfield DC	Ashfield
Bassetlaw DC	Bassetlaw
Birmingham City C	Birmingham
Blaby DC	Blaby
Bolsover DC	Bolsover
Boston BC	Boston
Bromsgrove DC	Bromsgrove
Broxtowe DC	Broxtowe
Cannock Chase DC	Cannock Chase
Charnwood BC	Charnwood
Chesterfield DC	Chesterfield
City of Wolverhampton Council	Wolverhampton
Coventry City Council	Coventry
Derby City Council	Derby
Derbyshire Dales DC	Derbyshire Dales
Dudley MBC	Dudley
East Lindsey DC	East Lindsey
East Staffordshire BC	East Staffordshire
Erewash BC	Erewash
Gedling DC	Gedling
Harborough DC	Harborough
Herefordshire County C	Herefordshire
High Peak BC	High Peak
Hinckley & Bosworth BC	Hinckley & Bosworth
Leicester City C	Leicester
Lichfield DC	Lichfield
Lincoln City C	Lincoln
Malvern Hills DC	Malvern Hills
Mansfield DC	Mansfield
Melton BC	Melton
Newark & Sherwood DC	Newark & Sherwood
Newcastle-under-Lyme DC	Newcastle-under-Lyme
North East Derbyshire DC	North East Derbyshire
North East Lincolnshire C	North East Lincs
North Kesteven DC	North Kesteven

North Lincolnshire C	North Lincs
North Warwickshire BC	North Warwickshire
North West Leicestershire DC	North West Leicestershire
Nottingham City Council	Nottingham
Nuneaton & Bedworth BC	Nuneaton & Bedworth
Oadby & Wigston DC	Oadby & Wigston
Redditch BC	Redditch
Rugby BC	Rugby
Rushcliffe BC	Rushcliffe
Rutland CC	Rutland
Sandwell MBC	Sandwell
Shropshire C	Shropshire
Solihull BC	Solihull
South Derbyshire DC	South Derbyshire
South Holland DC	South Holland
South Kesteven DC	South Kesteven
South Staffordshire C	South Staffordshire
Stafford BC	Stafford
Staffordshire Moorlands DC	Staffordshire Moorlands
Stoke-on-Trent City C	Stoke-on-Trent
Stratford-on-Avon DC	Stratford-on-Avon
Tamworth BC	Tamworth
Telford & Wrekin C	Telford & Wrekin
Walsall MBC	Walsall
Warwick DC	Warwick
West Lindsey DC	West Lindsey
Worcester City C	Worcester
Wychavon DC	Wychavon
Wyre Forest DC	Wyre Forest

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Executive Summary

MEH's Low Carbon and Environmental Goods and Services (LCEGS) sector was worth £26.6bn to the MEH's economy in 2019/20, as indicated by the value of sales in the sector. These sales were generated by over 10,500 businesses that employed over 195,000 people in the sector in 2019/20.

Sales and growth

The Low Carbon and Environmental Goods and Services sector in the MEH's region grew year on year since 2017/18. In 2017/18 total sales in the sector were worth £23.8bn have now reached £26.6bn in 2019/20.

The sector in the MEH region grew by 5.2% during the financial year 2017/18 to 2018/19 and 5.9% during 2018/19 to 2019/20. This rate of growth is slower than the UK average for the same period (10.0% and 8.1% respectively), however, the fast rate of growth in London raises the UK average.

Employment

Employment in MEH's Low Carbon and Environmental Goods and Services sector in 2019/20 was 195,817, up from 176,395 in 2017/18. Annual growth rate in employment was 5.7% between 2017/18 and 2018/19 and 5.0% between 2018/19 and 2019/20. This rate of growth is slower than the UK average for the same period (9.4% and 7.3% respectively) however, the fast rate of growth in London raises the UK average.

Companies

The number of companies in MEH's Low Carbon and Environmental Goods and Services sector in 2019/20 was 10,559, up from 9,531 in 2017/18. Annual growth rate in the number of companies was 3.7% between 2017/18 and 2018/19 and 6.9% between 2018/19 and 2019/20. This rate of growth is slower than the UK average for the same period (9.3% and 10.3% respectively) however, the fast rate of growth in London raises the UK average.

MEH's sub-sectors

In 2019/20 MEH's Low Carbon and Environmental Goods and Services sector was made up by the following proportions: Renewable Energy 39%, Low Carbon 39% and Environmental 22%.

MEH's sub-sector strengths

The five largest sub-sectors in the Low Carbon and Environmental Goods and Services sector by sales account for 64% of the MEH's total sales and are made up of:

- Wind (£4.4bn) – this includes control systems development and manufacture, drive train development, manufacture and systems integration, consulting houses and companies providing power firming systems and services, maintenance services and grid integration services
- Building Technologies (£4.0bn) - this includes head office functions, building systems design and consultancy and building systems providers and installers
- Alternative Fuels (£3.8bn) – this includes R&D functions, alternative fuel providers, designers and consultancy, process implementation, sales and accounting and application development specialists
- Photovoltaic (£2.8bn) - this includes head office functions, systems developers, providers and installers
- Water & Waste Water Treatment (£2.0bn) - development and implementation by utilities along with supply, consultancy and implementation by independent consulting engineers

The next six largest sub-sectors by sales account for a further 31% of MEH's total sales and are made up of:

- Biomass (£1.9bn) - this includes systems development, supply, implementation and R&D
- Waste Management (£1.8bn) - this includes process development and new process implementation and consulting, public and private operations management and supply and installation of operational equipment
- Alternative Fuel Vehicle (£1.5bn) - include selling agencies, alternative fuel development companies and consulting and applications development for vehicle conversion specialists
- Recovery and Recycling (£1.5bn) – this includes waste collection, glass stock processing and paper feedstock processing
- Geothermal (£1.2bn) - this includes branch office functions, design, international consultancy, lateral geothermal systems providers and installers at the domestic and small commercial level and vertical control systems developers and suppliers
- Energy Management (£0.6bn) – this includes registered gas engineers, measurement and control systems and fitting and maintenance

Sub-sector growth

MEH's five largest sub-sectors by sales have all enjoyed high levels of growth in sales, number of employees and number of companies between 2017/18 and 2019/20:

- Wind – sales have grown from £3.9bn to £4.4bn (11.3%), number of employees by 11.0% and number of companies by 11.1%
- Building Technologies – sales have grown from £3.6bn to £4.0bn (15.5%), number of employees by 11.2% and number of companies by 10.7%
- Alternative Fuels – sales have grown from £3.4bn to £3.8bn (11.4% increase), number of employees by 10.9% and number of companies by 10.8%
- Photovoltaic – sales have grown from £2.5bn to £2.8bn (11.3% increase), number of employees by 11.0% and number of companies by 10.7%
- Water & Waste Water Treatment – sales have grown from £1.8bn to £2.0bn (11.3% increase), number of employees by 11.0% and number of companies also by 9.9%

Sub-sectors which saw stronger growth than the UK average between 2017/18 and 2019/20 include:

- Alternative Fuel Vehicle with 11.4% (UK 5.7%)
- Energy Management with 11.4% (UK 5.7%)
- Air Pollution with 11.4% (UK 5.8%)
- Contaminated Land Reclamation and Remediation with 11.4% (UK 1.0%)
- Hydro with 11.0% (UK 1.8%)

Sub-sectors which saw weaker growth than the UK average between 2017/18 and 2019/20 include:

- Environmental Consultancy with 11.3% (UK 16.8%)
- Noise & Vibration Control with 11.4% (UK 23.3%)
- Additional Energy Sources with 11.3% (UK 15.9%)
- Carbon Capture & Storage with 11.3% (UK 19.0%)
- Biomass with 11.3% (UK 28.2%)
- Geothermal with 11.3% (UK 18.8%)
- Photovoltaic with 11.3% (UK 24.3%)
- Wave & Tidal with 11.2% (UK 24.9%)
- Wind with 11.3% (UK 42.2%)

Investment in R&D

Investment in R&D within MEH grew in all three categories of investment between 2017/18 and 2019/20:

- Private Equity Investment in R&D grew 16.2% from £1.8bn in 2017/18 to £2.1bn in 2019/20
- Venture capital Investment in R&D grew 14.6% from £3.1bn in 2017/18 to £3.5bn in 2019/20
- Other Investment in R&D grew 14.1% from £4.3bn in 2017/18 to £4.9bn in 2019/20

Sub-sector Strengths and Weaknesses

Sub-sector strengths include:

- Energy Management has stronger growth than the UK and above average market size
- Waste Management has weaker growth than the UK, but significantly above average market size
- Photovoltaic has weaker growth than the UK, but significantly above average market size
- Water & Waste Water Treatment has weaker growth than the UK, but significantly above average market size
- Biomass has weaker growth than the UK, but above average market size
- Building Technologies has weaker growth than the UK, but above average market size
- Contaminated Land has a stronger growth than the UK average, but below average market size
- Hydro has a stronger growth than the UK average, but below average market size
- Alternative Fuel Vehicle has a stronger growth than the UK average, but below average market size
- Air Pollution has a stronger growth than the UK average, but below average market size

Sub-Sector weaknesses include:

- Geothermal has weaker growth than the UK and below average market size
- Wave & Tidal has weaker growth than the UK and below average market size
- Carbon Finance has weaker growth than the UK and below average market size

Scalability of sub-sectors

Scalability of the sub-sectors within the MEH is variable and when combined with GVA, strengths include:

- Alternative Fuels with high GVA and high Scalability
- Renewable Energy General Consultancy with high Scalability but small GVA
- Environmental Monitoring with high Scalability but small GVA
- Water & Waste Water Treatment with good GVA and medium Scalability
- Building Technologies with very good GVA and medium Scalability

Skills Shortages

The skills and employment estimates are based on the Standard Occupational Classification (SOC).

Sector shortages

The skills shortage for the LCEGS sector for the MEH region being 8.7%.

Significant skills gaps are present within some SOC's with large numbers of employees:

- Production Engineers 35.7%
- Power Distribution Engineers 29.8%
- Technicians 22.2%

Insignificant skills gaps are present within some SOC's with large numbers of employees:

- General Semi-skilled Worker 2.1%
- Maintenance Engineer 6.3%
- Specialist or Consultant 3.3%
- Administrative Workers 2.1%

Level 1 shortages

Skills shortages within the MEH region at Level 1:

- Low Carbon 10.5%
- Renewable Energy 7.0%
- Environmental 10.3%

Skills gaps vary between SOC's for different Level 1 and Level 2 sub-sectors, for example:

Production Engineers:

- Low Carbon 43.7%
- Renewable Energy 27.9%
- Environmental 34.9%

Power Distribution Engineers:

- Low Carbon 33.7%
- Renewable Energy 27.1%
- Environmental 32.6%

Technicians:

- Low Carbon 27.9%
- Renewable Energy 17.3%
- Environmental 22.9%

Estimated Employment Requirements to Reach Net Zero by 2030 and 2050

Estimated growth in employees for the MEH region to reach zero by 2030:

- Worst-case scenario for the UK economy is 20.3%
- Best-case scenario for the UK economy is 57.9%

Estimated growth in employees for the MEH region to reach zero by 2050:

- Worst-case scenario for the UK economy is 86.0%
- Best-case scenario for the UK economy is 342.4%

Growth requirements for SOC's vary between Level 1 and Level 2 subsectors, for example the estimated growth requirement to reach net zero, best-case scenario for the UK economy:

Production Engineers:

- Low Carbon 17.0%
- Renewable Energy 34.5%
- Environmental 27.0%

Power Distribution Engineers:

- Low Carbon 28.1%
- Renewable Energy 35.1%
- Environmental 29.3%

Technicians:

- Low Carbon 34.2%
- Renewable Energy 45.9%
- Environmental 39.6%

Current Training Provision and Potential for Upskilling the Workforce

Strengths in the current training provision compared with the potential upskilling of the workforce in the MEH region include:

- Building Technologies with good training capacity and strong upskilling potential
- Water and Waste Water Treatment with good training capacity and high upskilling potential
- Noise & Vibration Control with good training capacity and high upskilling potential
- Carbon Finance with extremely good training capacity and good upskilling potential
- Photovoltaic with extremely good training capacity and good upskilling potential
- Building Technologies with good training capacity and good upskilling potential
- Water and Waste Water Treatment
- Recovery and Recycling with good training capacity and good upskilling potential
- Environmental Consultancy with good training capacity and good upskilling potential
- Biomass with good training capacity and good upskilling potential
- Waste Management with good training capacity and good upskilling potential
- Renewable Energy General Consultancy with average training capacity and very high upskilling potential

Weaknesses in the current training provision compared with the potential upskilling of the workforce in the MEH region include:

- Alternative Fuels with below average training capacity but extremely high upskilling potential
- Carbon Capture and Storage with low training capacity but extremely high upskilling potential
- Additional Energy Sources with very low training capacity but extremely high upskilling potential

Potential of Level 2 sub-sectors to impact on CO₂ reduction

Sub-sectors with a high estimated CO₂ reduction impact include:

- Wind with the largest market size and highest estimated potential impact
- Alternative Fuels with large market and high estimated potential impact
- Building Technologies with large market and high estimated potential impact
- Recovery and Recycling with large market and high estimated potential impact
- Renewable Energy General Consultancy with a small market but high estimated potential impact
- Carbon Finance with a small market but high estimated potential impact

Sub-sectors with a low estimated CO₂ reduction impact include:

- Environmental Consultancy with low estimated potential impact and small market
- Nuclear with low estimated potential impact and small market
- Biomass with low estimated potential impact but good market

MEH's Exports

The value of exports in MEH's Low Carbon and Environmental Goods and Services sector in 2019/20 was £2.8bn, an increase from £2.5bn in 2017/18. This accounted for 18% of the UK's LCEGS exports in 2019/20 and is higher than MEH's 14% share of the overall UK LCEGS market.

MEH's LCEGS exports grew by 4.5% and 6.2% over the last three years which was slower than the UK average.

MEH's top Export sub-sectors which saw large export market and strong growth include:

- Wind - £463m
- Energy Management - £58m
- Geothermal - £124m
- Building Technologies - £418m
- Biomass – £200m
- Waste Management - £184m

MEH's Imports

The value of imports in MEH region's Low Carbon and Environmental Goods and Services sector in 2019/20 was £2.7bn, an increase from £2.4bn in 2017/18. This accounted for 9.6% of the UK's LCEGS imports in 2019/20, below the MEH regions 12.1% share of the overall UK LCEGS market.

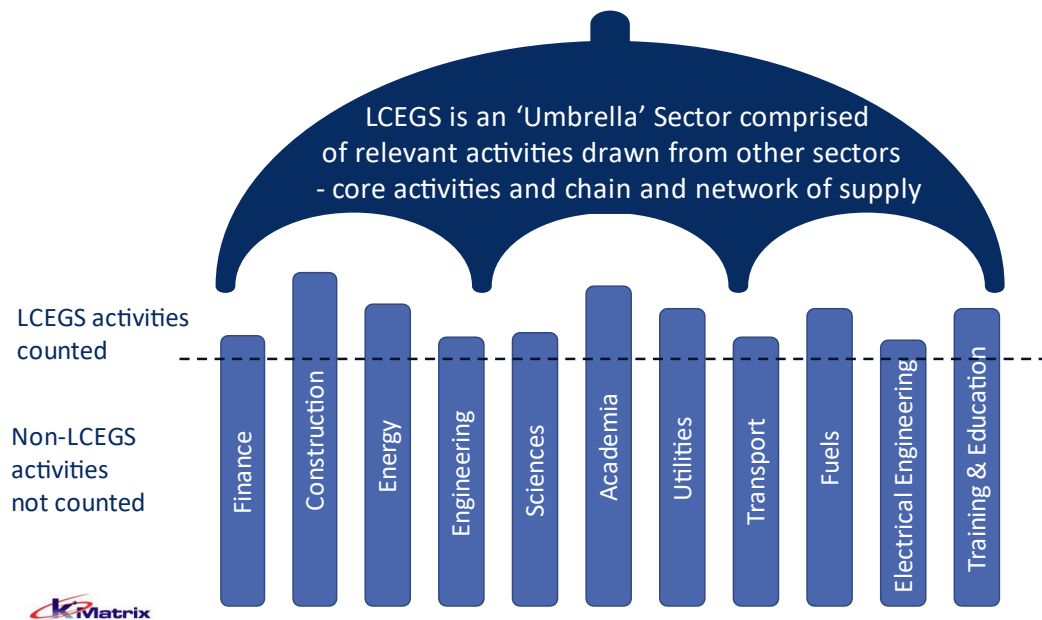
MEH region LCEGS imports grew by 5.8% and 5.9% over the last three years which compared with UK growth of approximately 10.0% and 7.4% respectively.

Introduction to the Low Carbon and Environmental Goods and Services Sector

This section includes a summary definition of the Low Carbon Environmental Goods Services sector, followed by a detailed description of the dataset that sits behind the data analysis and detail regarding the types of activities measured.

Summary Sector Definition

The Low Carbon Environmental Goods and Services sector comprises products and services from across the economy, which actively enable a shift towards a green economy. The LCEGS sector is considered an 'umbrella' or horizontal sector, crossing many other traditional sectors, counting products and services from those sectors which can reduce carbon emissions and improve the environment:



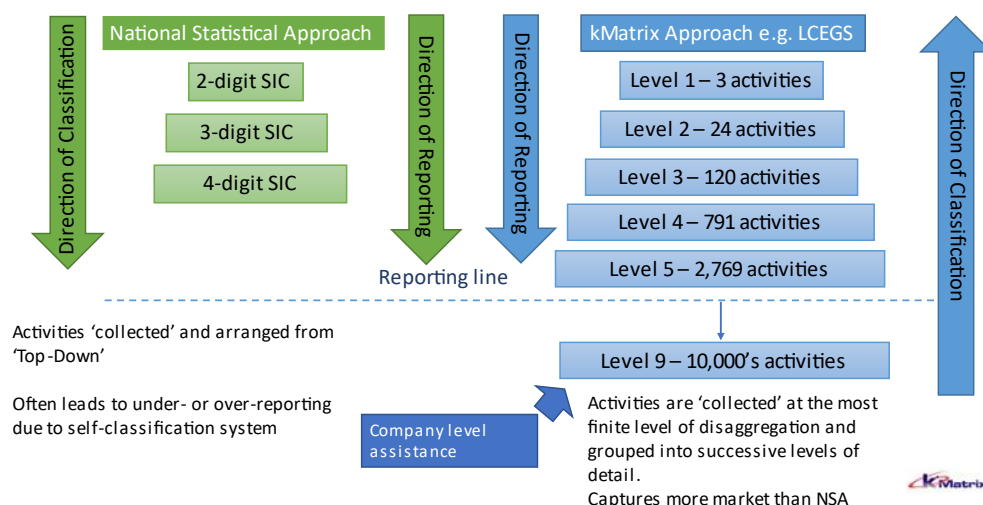
The sector is comprised of both core elements and those in the chain and network of supply, without whom the sector could not function.

Brief Methodology

kMatrix uses a unique data triangulation methodology, developed with Professor R. Jaikumar of Harvard University over 35 years ago.

The process was originally developed to look at individual companies, providing evidenced data for development. As such, sectors are classified from the 'bottom up', collecting activities from the most finite level of granulation and grouping them into successive levels of detail.

Example of bottom-up approach to classification – LCEGS Taxonomy



This is quite different to the National Statistical Approach, which classifies from the 'top down', with a company choosing their 2-digit code, then successive codes down through the classification system. The SIC system is very good as a national accounting system, but it struggles with hard to measure sectors such as LCEGS. Here, the kMatrix system of data collection, which triangulates transactional data from many sources, up to 70,000 for this study, provides the flexibility of a definition tailored to the sector being studied. Although the sector is classified from the bottom up, the sector taxonomy is reported from the sector level down, through a series of levels of complexity.

This process has measured the LCEGS sector for the Greater London Authority and the UK for over a decade. kMatrix also collaborate with academic colleagues in several fields, co-authoring academic papers, which are peer-reviewed and published in academic journals including Nature, Climate Services and the Lancet.

Example sectors the process has been applied to, where evidence is available in the public domain via clients publishing reports or published peer-reviewed academic journals include:

- Cyber Security: https://www.eunity-project.eu/m/filer_public/4b/62/4b6262dc-3bca-4145-a84b-b514049156ce/1_lsec_japan_eunity_ecso_wg2_cima_seldeslachts_ulrich_20190124881.pdf
- Low carbon environmental goods and services sector: https://www.london.gov.uk/sites/default/files/london_low_carbon_market_snapshot_-_2019.pdf and https://www.enterprisem3.org.uk/sites/default/files/2020-02/Hampshire-LCEGS-Market-Report-2015-16-to-2017-18-2nd-Draft_0.pdf
- The green Economy: <https://rgs-ibg.onlinelibrary.wiley.com/doi/pdf/10.1002/geo2.36> and <https://www.nature.com/articles/s41599-019-0329-3>
- Adaptation economy: <https://www.nature.com/articles/nclimate2944>
- Carbon Finance: <https://www.nature.com/articles/nclimate1492?draft=marketing>
- Weather and Climate: <https://advances.sciencemag.org/content/3/5/e1602632.full>
- Climate Services: <https://www.sciencedirect.com/science/article/pii/S2405880719300494?via%3Dihub>

The LCEGS Dataset

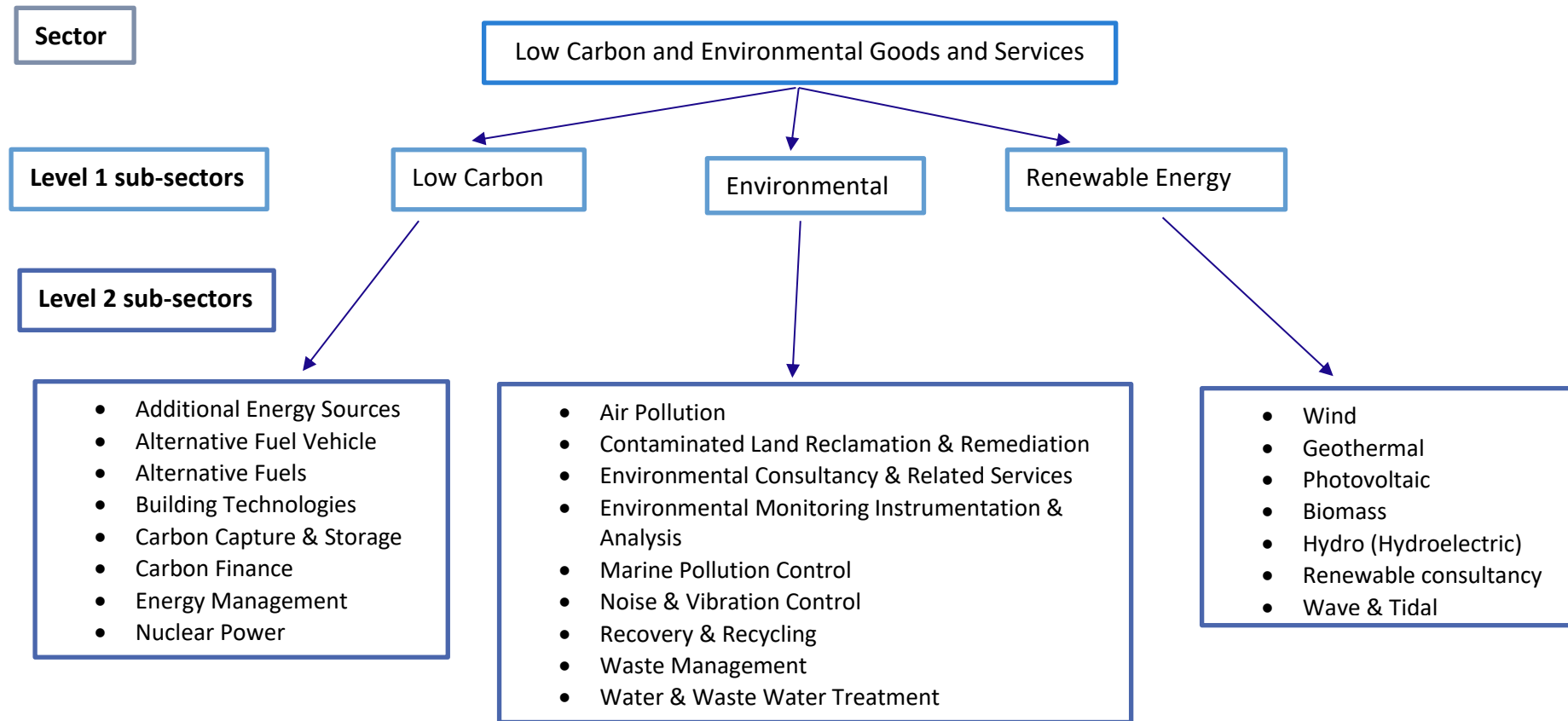
The data used in this report is based upon the work and methodology used by kMatrix to provide datasets on the UK's Low Carbon Environmental Goods and Services (LCEGS) sector for UK Government reported annually by the Department for Business, Innovation and Skills (BIS) from 2008/09 to 2011/12 and further reported every 3 years for the UK and London by the Greater London Authority to 2017/18, representing a continuous annual timeseries of the LCEGS sector for over a decade.

The LCEGS sector has been defined using 24 sub-sectors (or Level 2 markets) grouped into three broad categories (or Level 1 markets) - Environmental, Renewable Energy and Low Carbon. The addition of the Renewable Energy and Low Carbon groupings illustrates the evolution of the current LCEGS sector definition from its original Environmental roots and reflects developments in the market as sectors across the economy evolve to address the environmental challenges that they and the world is facing.

The dataset measures the core activities of the sector along with those in the supply chain, without whom the LCEGS sector could not operate. For example, the Wind sector includes those companies which develop the systems integration software enabling the power generated through turbines to be integrated into the National Grid, but it also includes those companies installing and maintaining the system integration software itself. Another example would be the collection of household waste, where the collection, processing and recycling of the waste is included, along with those companies who design, manufacture and supply the waste collection equipment itself.

The time series provides 11 years of sales, companies and employment data and 10 years of growth rates for the LCEGS sector as a whole. The data is then broken down into three Level 1 sub-sectors (Low Carbon, Environmental and Renewable Energy) and then those three sub-sectors are split into further Level 2 sub-sectors to provide greater resolution and insights for analysing the data.

The kMatrix methodology is based around the production of a taxonomy, similar to that used for biological taxonomic ranking, with similar products and services being grouped together. As an illustration (provided below), the LCEGS sector is broken down into three Level 1 sub-sectors, one of which is Renewable Energy, which is in turn broken down into seven Level 2 sub-sectors, one of which is Wind that is then broken down into a further three Level 3 sub-sectors and so on:



Although the taxonomy is reported and organised ‘top down’ as it goes from the sector to Level 1, to Level 2 etc., the data is gathered and organised from the ‘bottom up’. The data is collected at the most finite disaggregation and then ‘rolled up’ to form the different levels. The current LCEGS sector definition, used in this report, includes 2,800 product and service activities at level 5 that are derived from sector supply chain activities (componentry & assemblies) and value chain activities (R&D, Supply & Training).

A glossary of economic activities included for each sub-sector of LCEGS is included as Appendix 1, a brief explanation of the LCEGS methodology as Appendix 2 and then a high-level comparison of data and methodologies between the Office of National Statistics (ONS) Environmental Goods and Services sector and LCEGS is presented in Appendix 3.

What is actually measured?

The dataset measures the core activities of the sector along with enabling activities in the supply chain, without whom the LCEGS sector could not operate. For example, the Wind sector includes those companies which develop the systems integration software enabling the power generated through turbines to be integrated into the National Grid, but it also includes those companies installing and maintaining the system integration software itself. Another example would be the collection of household waste, where the collection, processing and recycling of the waste is included, along with those companies who design, manufacture and supply the waste collection equipment itself.

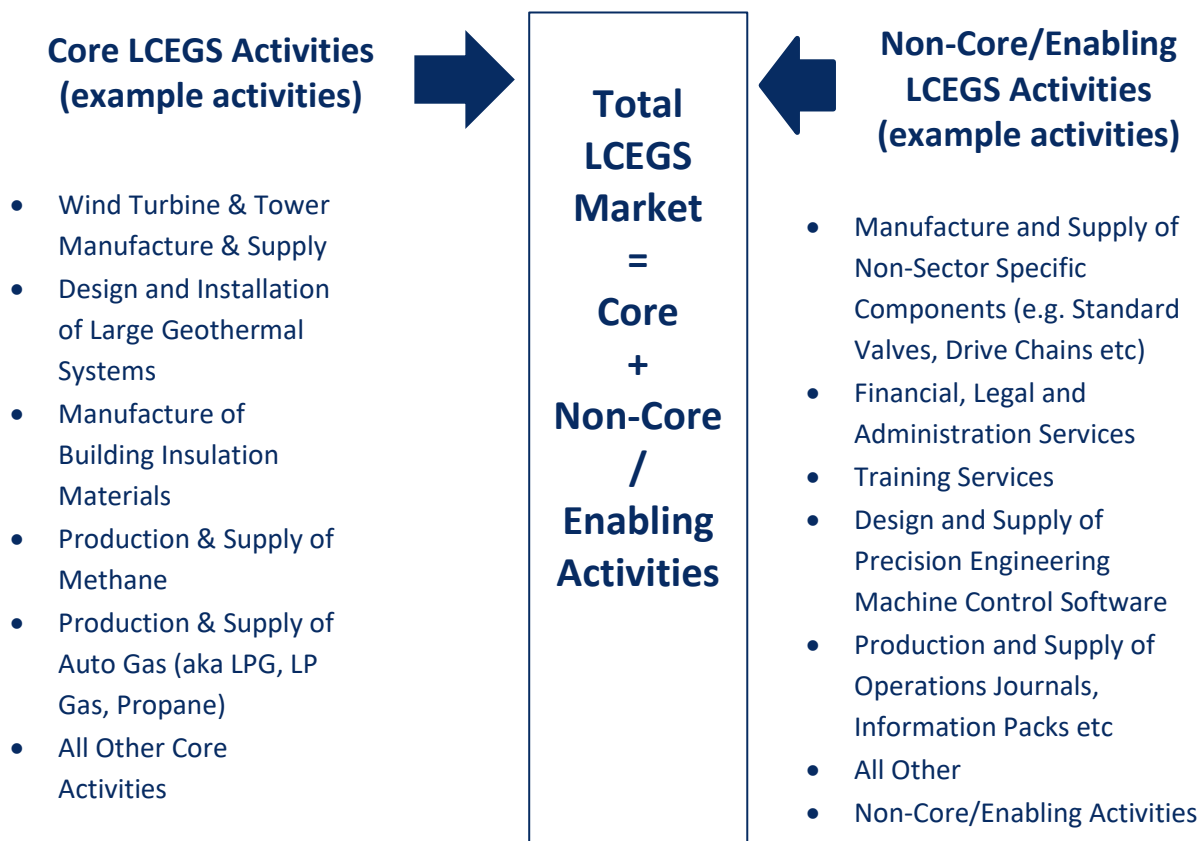
The purpose of the LCEGS dataset in its original form, is to provide a standardized measure of the complete LCEGS sector. The whole dataset includes those 'core' activities, which would immediately come to mind such as the manufacture of a wind turbine blade, but also the less obvious 'non-core' activities, such as the manufacture of the bearings for the turbine. Non-Core activities can be considered "enablers" for the Core sector and are often companies who have diversified from existing strengths into new sector activities. Non-core activities also include mid-stream activities, R&D, finance, training and other activities which cross multiple other sectors, but without which the LCEGS sector could not function.



The definition of a sector is almost always open to debate, in terms of what is, or is not, considered to be part of the sector in question. The kMatrix methodology includes all aspects that can realistically be considered part of the LCEGS sector. The taxonomy is built and interrogated by assembling activities and services which are then grouped together under different headings. From the example taxonomy in figure 1, seven level 2 activities are grouped together to form the Renewable Energy Level 1 heading. There are five levels in total, comprising approximately 2,800 activities.

The following picture illustrates the two distinctive sides of the LCEGS market, the smaller Core market and the much larger Non-Core market, provided by enablers within the LCEGS sector. Examples give a simplistic overview of the types and differences between activities, with the Core side including activities such as manufacture of wind turbines and building insulation materials. The enablers providing Non-Core activities are offering components that are non-sector specific, such as valves, gaskets, drive chains etc., alongside financial, legal and administration activities.

In essence, Core activities are those products and services which are generally LCEGS specific, whereas the Non-Core activities, provided by enablers are products and services which are not LCEGS specific and can generally be found in other sectors. Core activities are considered vertical in nature, being sector specific, whereas Non-Core activities are horizontal, crossing other sectors. Both sides of the market are required for the sector to function.



The economic values provided are Sales values, which are transactions made within the sector, which have an economic footprint that can be measured. For companies which service multiple sectors, for example in finance, the sales value is the value of sales that company has in the LCEGS market, it does not include finance sales into other sectors.

The complexity of determining the potential contribution to net zero

Understanding the potential contribution of each sub-sector to net zero targets (2030 & 2050) is important in identifying where priority markets lie for reaching those goals. Although the LCEGS sector entails low carbon and renewable energy technologies, they are not all equal in terms of their own carbon footprints or their ability to impact on net zero targets.

When assessing the potential for each Level 2 sub-sector to contribute to net-zero, there are a number of factors to consider, including:

- The embodied carbon of the product, is the carbon footprint to make the product, increasing throughout the supply chain and across geographies
- The carbon emissions during transportation, installation and commissioning of a product
- The emissions produced during operational lifetime of a product
- The emissions produced during decommissioning, dismantling and recovery of materials
- The localisation and format of the chain and network of supply

Academia varies with regards to estimating the carbon footprint of products, for example, photovoltaic systems produce almost zero carbon emissions when in operation, however carbon emissions are produced during the manufacturing process. Life cycle analysis of renewable energy systems, quantifying the carbon emissions of photovoltaic systems, report a wide range of carbon emissions factors. This is partly due to different methodologies and associated assumptions or design considerations³.

There are also variations in carbon emissions within industries, for example, the life cycle carbon emissions from both on- and off-shore wind are very low at 15 and 12 gCO₂eq/kWh⁴. The carbon emissions reduction of wind power cannot be solely estimated as being the value of carbon emissions displaced from coal- or gas-fired generation. Wind power is not carbon-zero, because greenhouse gases are emitted during installation, maintenance and decommissioning and wind power will not replace all forms of conventional generation equally and will depend on the operation of the whole grid. Variations in cost and carbon emissions estimates are affected by assumptions made in the calculation itself and the differences in wind turbine designs, manufacturing and installations locations, maintenance and disposal.

When the embodied emissions for each material involved in manufacture, transport to site and installation are quantified, higher rated turbines had greater embodied carbon emissions, with a 3 MW turbine incorporating 1046 tCO₂eq, compared with only 58 tCO₂eq for an 80 kW turbine. However, the greater electricity output from the larger turbines offset these emissions more quickly, with a recovery of 6 days for a 3.4 MW turbine, compared with 354 days for a 100kW one.⁵ Renewable energy generation is clean when compared with conventional energy generation methods, however the cost, payback time, size of power generation, construction time, resource capacity, characteristics of resource, external funding and other factors have affected how quickly different technologies have been adopted and the subsequent relative sizes of each market. The size of each market, corresponding to the carbon emissions displaced from conventional energy generation methods differs, as does the lifecycle carbon footprint of each renewable energy sub-sector.

Building Technologies are hugely important in terms of decarbonisation potential. An estimated 37% of UK emissions are attributable to heat⁶, so building technologies such as roof and wall insulation, insulative glazing and other technologies designed to prevent the loss of heat can indirectly lead to reduction in energy usage and carbon emissions. As for the renewable energy sub-sector, the reductions in carbon emissions through a decrease in energy consumption, must offset

³ Nian, V (2016) Impacts of changing design considerations on the life cycle carbon emissions of solar photovoltaic systems. J. Applied Energy 183 (2016) 1471-1487
<https://doi.org/10.1016/j.apenergy.2016.08.176>

⁴ https://www.climateexchange.org.uk/media/1459/life_cycle_wind_-_executive_summary_.pdf

⁵ Smoucha EA, Fitzpatrick K, Buckingham S, Knox OGG (2016) Life Cycle Analysis of the Embodied Carbon Emissions from 14 Wind Turbines with Rated Powers between 50 Kw and 3.4 Mw. J Fundam Renewable Energy Appl 6: 211. doi:10.4172/20904541.1000211

⁶ Clean Growth – Transforming Heating, Overview of Current Evidence, Department for Business, Energy and Industrial Strategy, December 2018
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/766109/decarbonising-heating.pdf

any embodied carbon and those emissions associated with transportation, installation, those produced during usage, maintenance and 'end-of-life' recovery of materials.

In terms of sub-sectors within the Environmental Level 1 sub-sector, the carbon footprint of Water and Waste Water Treatment may be decreased dramatically by the usage of forward osmosis membrane-technology during the next generation of waste water treatment⁷.

Within Waste Management, the collection, re-use and recycling of the 2 Mt of waste electrical and electronic equipment (WEEE) produced in the UK each year has become a foremost environmental issue in the UK⁸, where efforts are undergoing to increase the levels and efficiency of recycling. Each sub-sector within the LCEGS sector has the potential to play their part in the move towards net zero, but as indicated above, the relative impact they may have varies both between sub-sectors and between academics attempting to quantify current levels.

For this study, the level 2 sub-sectors have been allocated a relative impact score of "Low", "Medium" and "High", based upon estimates including the activities present in the area being studied, the localization of chains and networks and supply and the technologies both being used and produced.

⁷ Environ. Sci.: Water Res. Technol., 2020, 6, 153

⁸ Clarke C, Williams I, Turner D, (2019) Evaluating the carbon footprint of WEE management in the UK. J Resources, Conservation & Recycling 141 (2019) 465-473

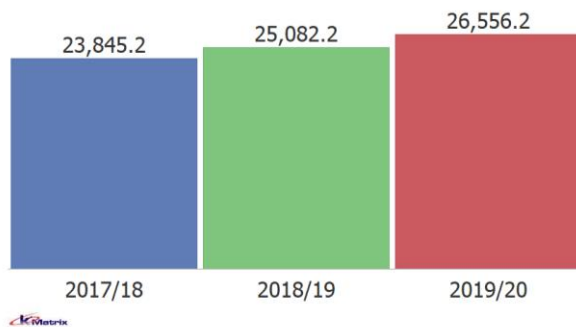
1. Midlands Energy Hub's Low Carbon and Environmental Goods and Services (LCEGS) Analysis

This section of the report analyses The Midlands Energy Hub Region's LCEGS at Level 1 and Level 2. It also provides information at Level 3 to show the type of activities included in these sub-sectors.

1.1 LCEGS Compared by Year

In this section of the report MEH's LCEGS performance is compared for the last three years for the three key measures of Sales, Employment and Growth.

Figure 1: Sales 2017/18 to 2019/20 in £m

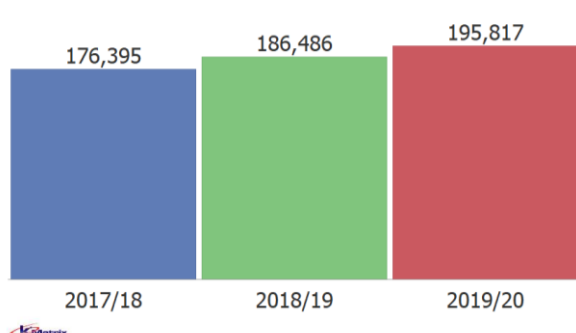


MEH's LCEGS sales in 2019/20 were £26.6bn, up from £23.8bn in 2017/18.

Annual sales growth in MEH's LCEGS was 5.2% from 2017/18 to 2018/19 and 5.9% from 2018/19 to 2019/20.

In comparison UK sales growth in LCEGS was 10.0% and 8.1% respectively.

Figure 2: Employment 2017/18 to 2019/20

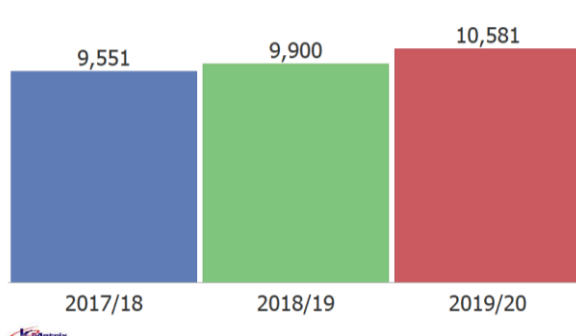


MEH's LCEGS employment in 2019/20 was 195,817, up from 186,486 in 2017/18.

Annual employment growth in MEH's LCEGS was 5.7% from 2017/18 to 2018/19 and 5.0% from 2018/19 to 2019/20.

In comparison UK employment growth in LCEGS was 9.4% and 7.3% respectively.

Figure 3: Companies 2017/18 to 2019/20



MEH's LCEGS company count in 2019/20 was 10,559, up from 9,531 in 2017/18.

Annual company growth in MEH's LCEGS was 3.7% from 2017/18 to 2018/19 and 6.9% from 2018/19 to 2019/20.

In comparison UK company growth in LCEGS was 9.3% and 10.3% respectively.

Growth in MEH region has been lower across each of the three parameters between 2017/18 and 2019/20 when compared with the UK as a whole.

1.2 MEH's LCEGS at Level 1

The analysis in this section of the report focuses on the Level 1 and Level 2 split of LCEGS in MEH for each of the last three years.

Figure 4: Sales 2017/18 to 2019/20 in £m (Level 1)

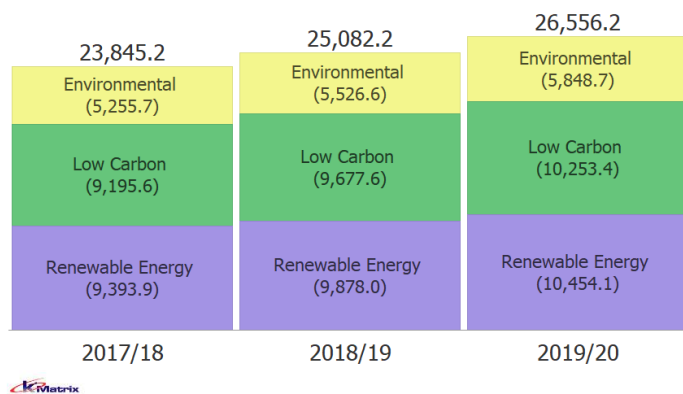


Figure 4 shows the three-year LCEGS sales split by Level 1.

In 2017/18 the split was 39% Renewable Energy, 39% Low Carbon and 22% Environmental. The split had not changed in 2019/20.

Figure 5: Employment 2017/18 to 2019/20 (Level 1)

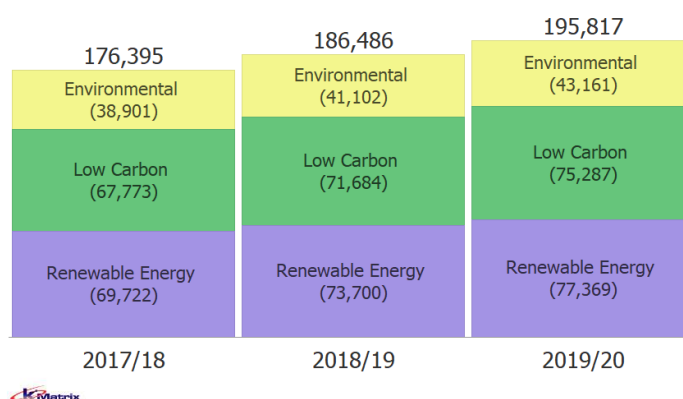


Figure 5 shows the three-year employment split by Level 1.

In 2017/18 the split was 40% Renewable Energy, 38% Low Carbon and 22% Environmental. The split had not changed in 2019/20.

Figure 6: Companies 2017/18 to 2019/20 (Level 1)

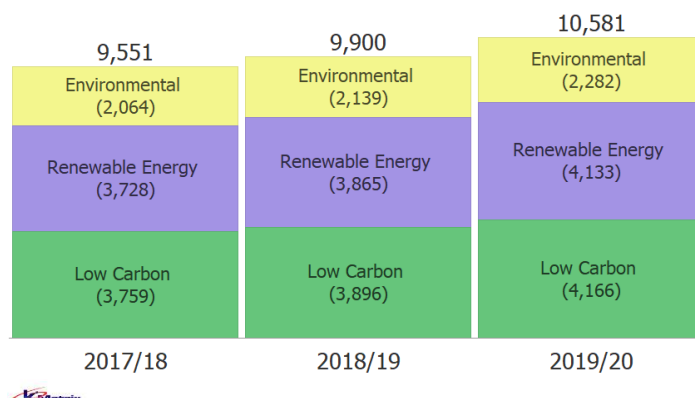


Figure 6 shows the three-year company split by Level 1.

In 2017/18 the split was 39% Renewable Energy, 39% Low Carbon and 22% Environmental. The split had not changed in 2019/20.

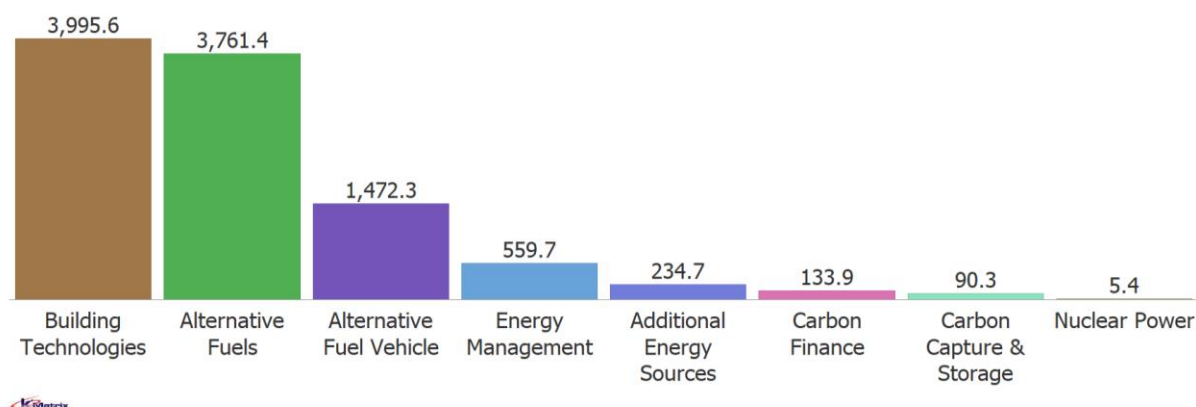
In 2019/20 UK LCEGS sales was split - Low Carbon 48%, Renewable Energy 37% and Environmental 16%. If we remove Carbon Finance from the UK figures, the split is Low Carbon 44%, Renewable Energy 40% and Environmental 17%.

1.3 MEH's LCEGS Level 1 - Low Carbon Market

In this section we look at the Low Carbon market in greater detail. Initially we split the market into eight further sub-sectors (Level 2) and then look at the highest performing Level 2 sub-sectors in more detail by highlighting activity happening within them at Level 3.

1.3.1 Low Carbon Market (Level 2)

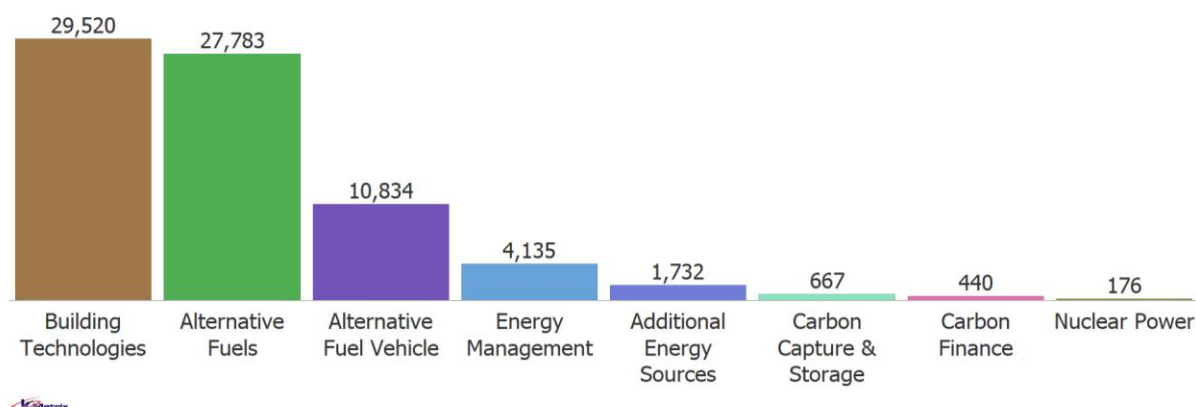
Figure 7: Sales 2019/20 in £m (Level 2)



Low Carbon is further sub-divided into eight sub-sectors, of which four account for 95% of sales (Figure 7). These four are made up of Building Technologies 39%, Alternative Fuels 37%, Alternative Fuel Vehicle 14% and Energy Management 5%.

Each of these four sub-sectors grew between 2017/18 and 2019/20: Building Technologies from £3.6bn to £4.0bn; Alternative Fuels from £3.4bn to £3.8bn; Alternative Fuel Vehicle from £1.3bn to £1.5bn and Energy Management from £502.5m to £559.7m.

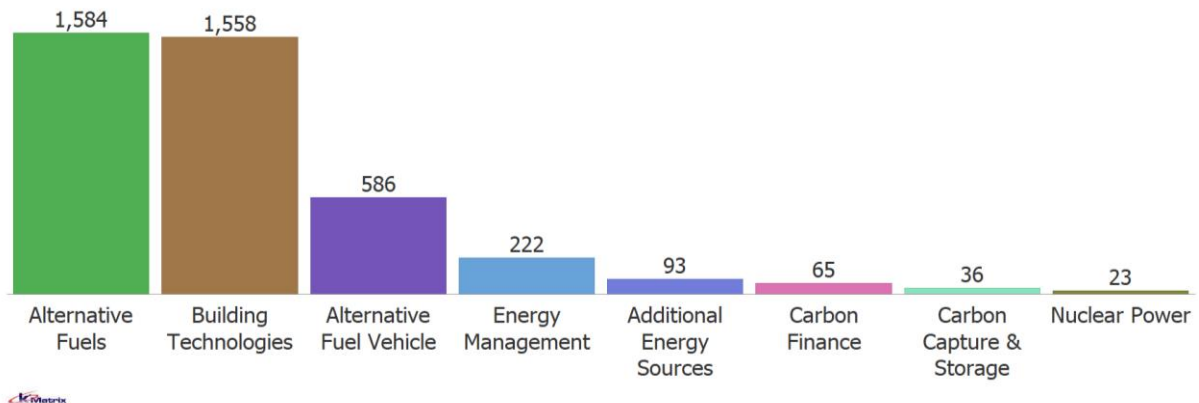
Figure 8: Employment 2019/20 (Level 2)



The same four sub-sectors account for 96% of employment (Figure 8). They are Building Technologies 39%, Alternative Fuels 37%, Alternative Fuel Vehicle 14% and Energy Management 6%.

Each of these four sub-sectors grew between 2017/18 and 2019/20: Building Technologies from 26,551 to 29,520; Alternative Fuels from 25,055 to 27,783; Alternative Fuel Vehicle from 9,759 to 10,834 and Energy Management from 3,727 to 4,135.

Figure 9: Companies 2019/20 (Level 2)

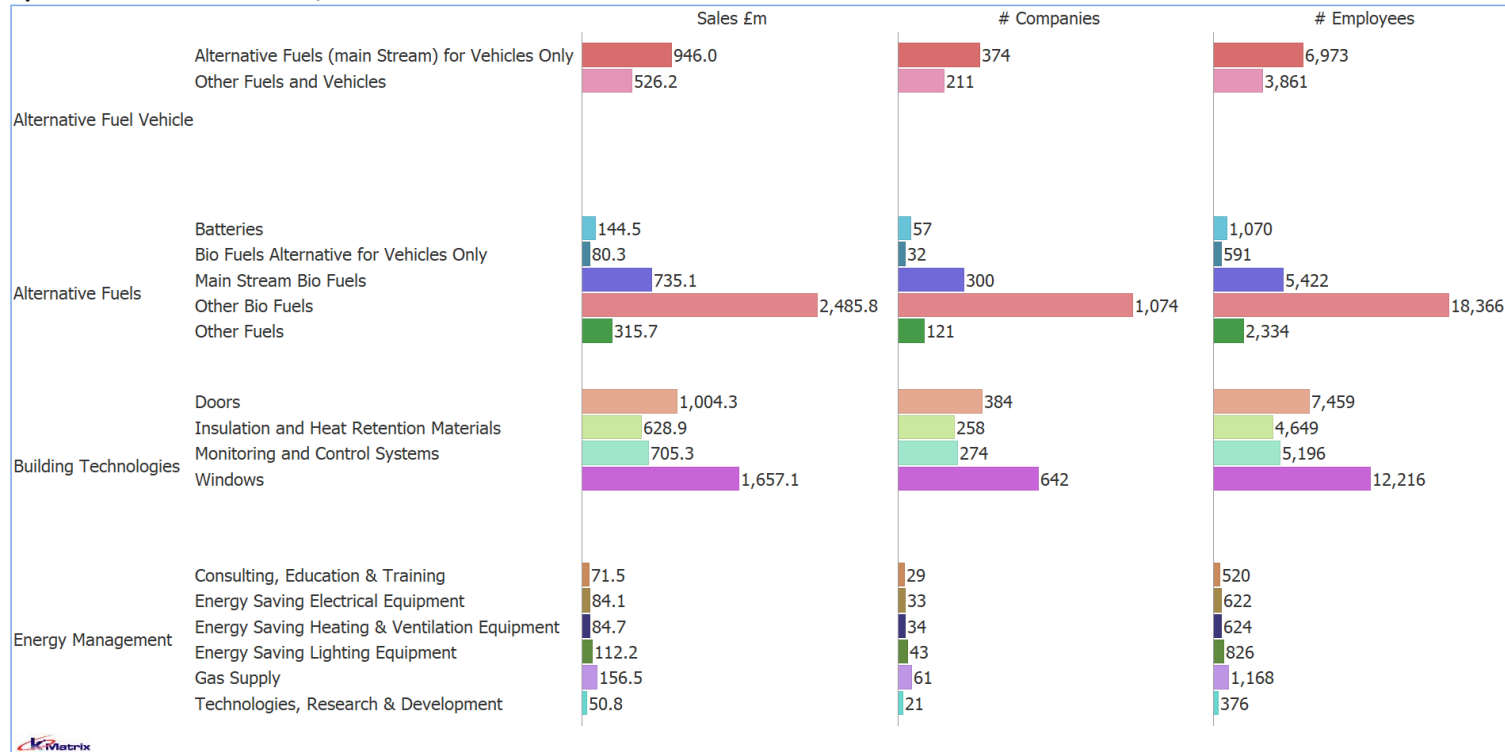


The same four sub-sectors again account for 95% of companies (Figure 9). They are Alternative Fuels 38%, Building Technologies 37%, Alternative Fuel Vehicle 14% and Energy Management 5%.

Each of these four sub-sectors grew between 2017/18 and 2019/20: Alternative Fuels from 1,429 to 1,584; Building Technologies from 1,407 to 1,558; Alternative Fuel Vehicle from 528 to 586 and Energy Management from 201 to 222.

1.3.2 Low Carbon Market at Level 3

Figure 10: Summary of selected metrics for 2019/20 for selected Low Carbon Level 2 sub-sectors at Level 3



The top four Level 2 sub-sectors for Low Carbon are Alternative Fuel Vehicle, Alternative Fuels, Building Technologies and Energy Management, making up 96% of the Low Carbon market in the MEH Region. Figure 10 shows a summary of the Sales, Companies and Employees for these Level 2 sub-sectors, broken out into their Level 3 sub-sectors.

Building Technologies is the largest Level 2 sub-sector and Windows is the largest of the four Level 3 sub-sectors, making up 41% of the market. Example companies in this sub-sector would include window manufacturers, agents and installers.

Alternative Fuels has five sub-sectors at level 3, of which, Other Biofuels accounts for 66% of Sales. Example companies of this sub-sector would include process designers and consultancy, process implementation and sales and application development specialists.

Alternative Fuel Vehicles has only two sub-sectors at level 3, with Alternative Fuels (main stream) for Vehicles Only holding 64% of the market share. Example companies in this sub-sector would include selling agencies, alternative fuel development companies and consulting and applications development for vehicle conversion specialists.

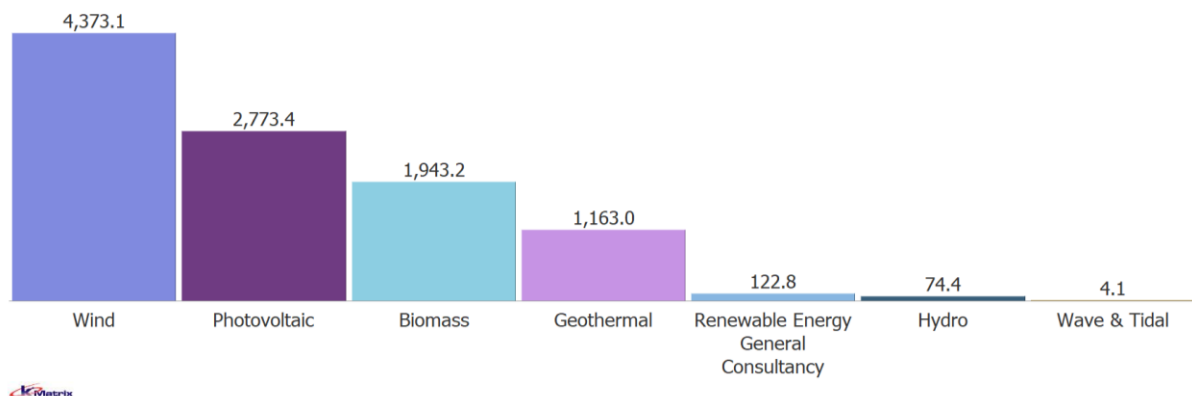
Energy Management has six sub-sectors at level 3, with Gas Supply holding 28% of the market share. Example companies in this sub-sector would include registered gas engineers, measurement and control systems and fitting and maintenance.

1.4 MEH's LCEGS Level 1 - Renewable Energy Market

In this section we look at the Renewable Energy market in greater detail. Initially we split the market into eight further sub-sectors, Level 2, and then look at the highest performing Level 2 sub-sectors in more detail by highlighting activity happening within them at Level 3.

1.4.1 Renewable Energy Market at Level 2

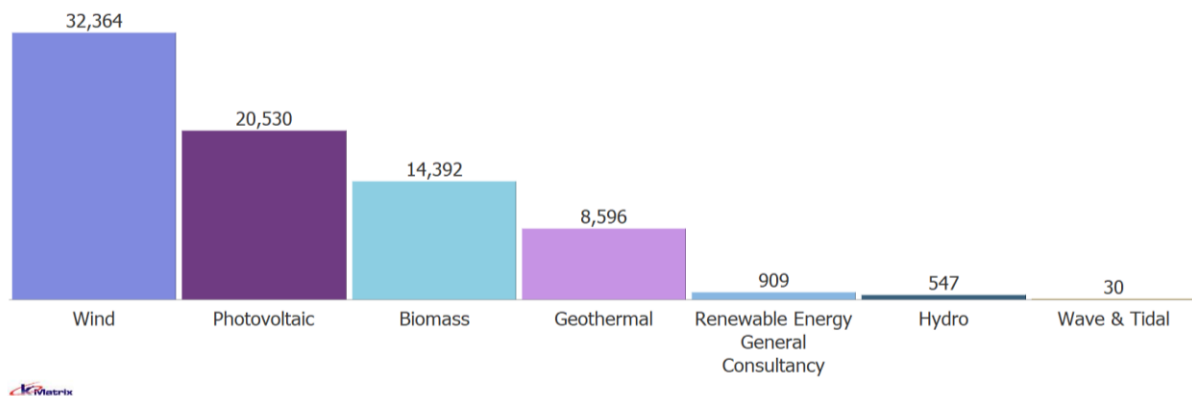
Figure 11: Sales 2019/20 in £m (Level 2)



Renewable Energy is then split into seven sub-sectors, of which four account for 98% of sales (Figure 11). These four are made up of Wind 42%, Photovoltaic 27%, Biomass 19% and Geothermal 11%.

Each of these four sub-sectors have grown between 2017/18 and 2019/20: Wind from £3.9bn to £4.4bn; Photovoltaic from £2.5bn to £2.8bn; Biomass from £1.7bn to £1.8bn and Geothermal from £1.0bn to £1.2bn.

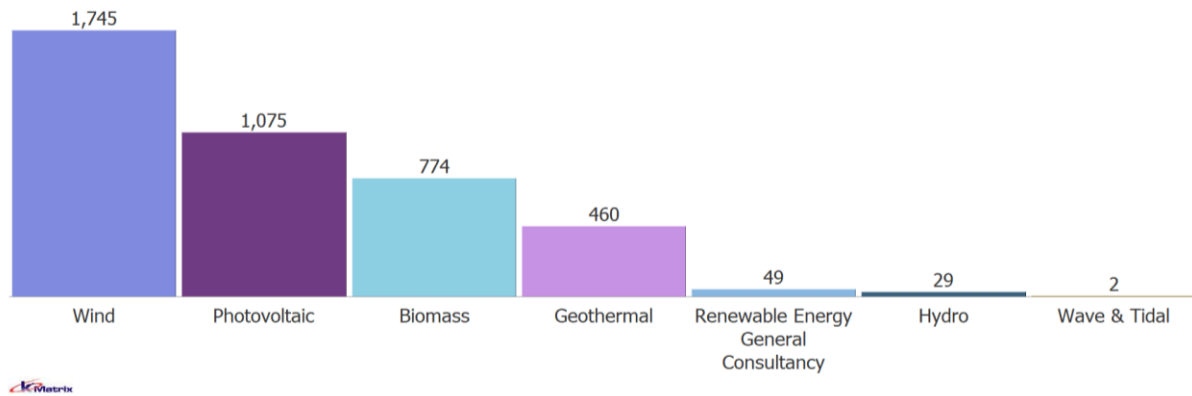
Figure 12: Employment 2019/20 (Level 2)



The same four sub-sectors account for 98% of employment (Figure 12). They are made up of Wind 42%, Photovoltaic 27%, Biomass 19% and Geothermal 11%.

Each of these four sub-sectors have grown between 2017/18 and 2019/20: Wind from 29,156 to 32,364; Photovoltaic from 18,493 to 20,530; Biomass from 12,985 to 14,392 and Geothermal from 7,745 to 8,596.

Figure 13: Companies 2019/20 (Level 2)

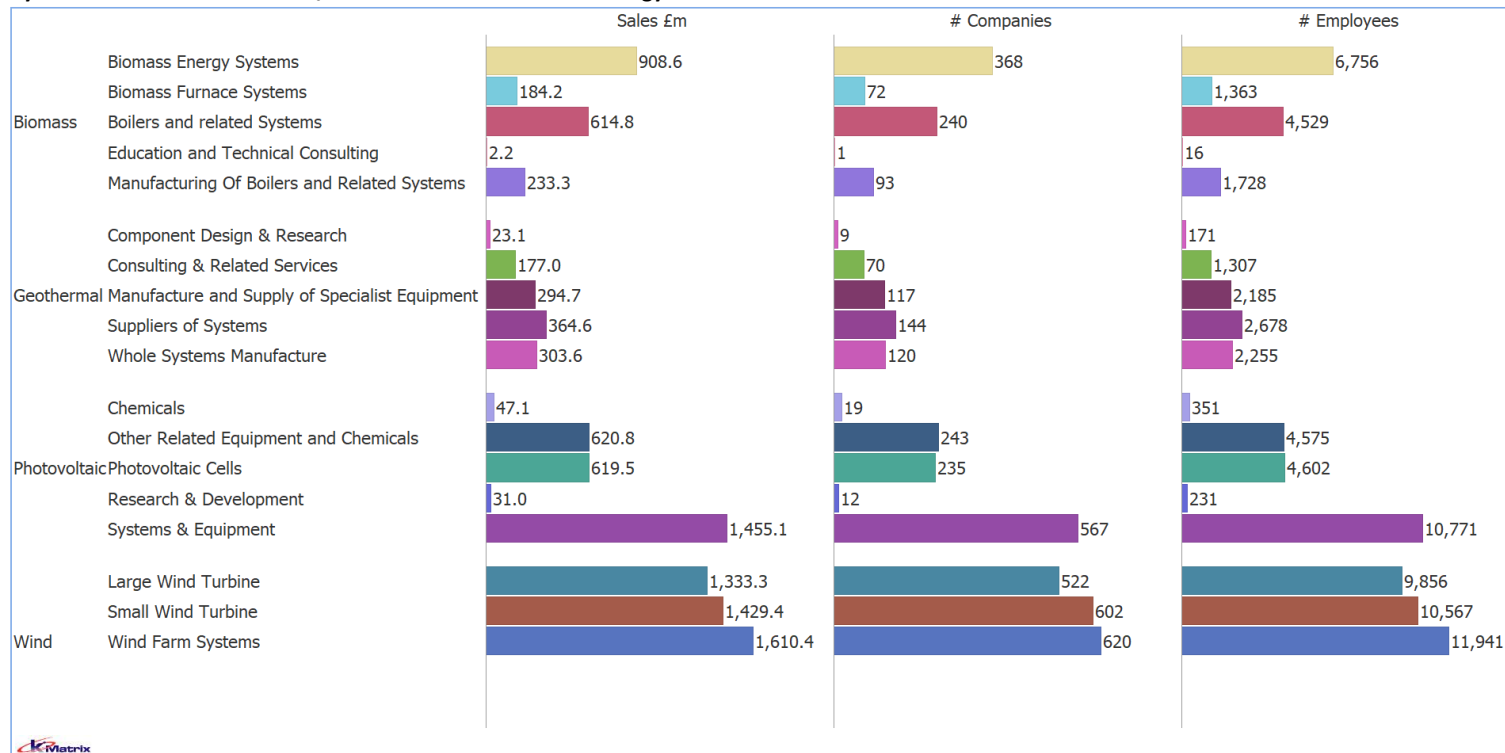


The same four sub-sectors also account for 98% of companies (Figure 13). They are made up of Wind 42%, Photovoltaic 26%, Biomass 19% and Geothermal 11%.

Each of these four sub-sectors have grown between 2017/18 and 2019/20: Wind from 1,570 to 1,745; Photovoltaic from 971 to 1,075; Biomass from 698 to 774 and Geothermal from 415 to 460.

1.4.2 Renewable Energy Market at Level 3

Figure 14: Summary of selected metrics for 2019/20 for selected Renewable Energy Level 2 sub-sectors at Level 3



The top four Level 2 sub-sectors for Low Carbon are Wind, Photovoltaic, Biomass and Geothermal, making up 98% of the Renewable Energy market in the MEH Region. Figure 14 shows a summary of the Sales, Companies and Employees for these Level 2 sub-sectors, broken out into their Level 3 sub-sectors.

Wind is the largest Level 2 sub-sector with 42% of sales and has three sub-sectors at Level 3, the largest being Wind Farm Systems which makes up 37% of sales in this market. Example companies include those providing power firming systems and services, maintenance services and grid integration services.

Photovoltaic has five sub-sectors at level 3, the largest being Systems & Equipment which makes up 52% of sales in this market. Example companies include systems developers, suppliers and installers.

Biomass has five sub-sectors at level 3, the largest being Biomass Energy Systems which makes up 47% of the sales in this market, example companies include developers, installers and consultancies.

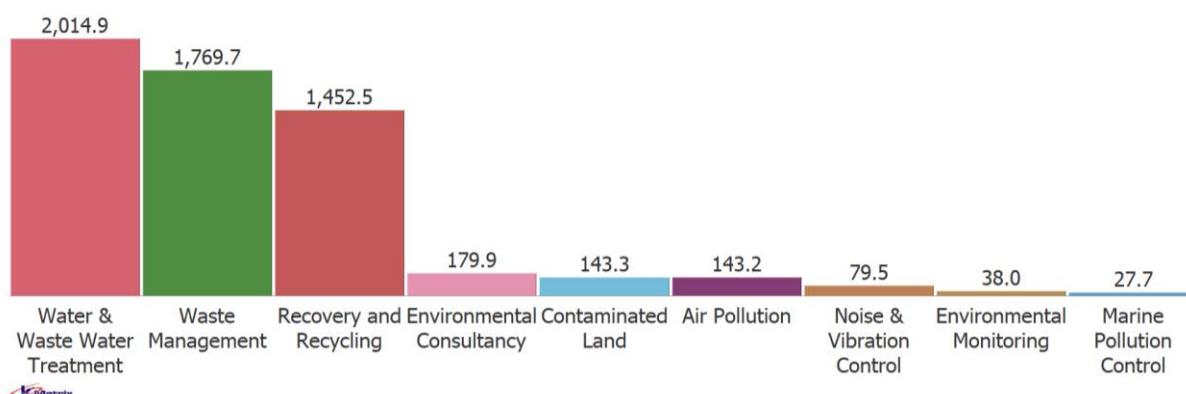
Geothermal has five sub-sectors at Level 3, the largest being Suppliers of Systems which makes up 31% of the sales in this market. Example companies include lateral geothermal systems providers and installers at the domestic and small commercial level and vertical control systems developers and suppliers.

1.5 MEH's LCEGS Level 1 - Environmental Market

In this section we look at the Environmental market in greater detail. Initially we split the market into eight further sub-sectors, Level 2, and then look at the highest performing Level 2 sub-sectors in more detail by highlighting the activity happening within them at Level 3.

1.5.1 Environmental Market at Level 2

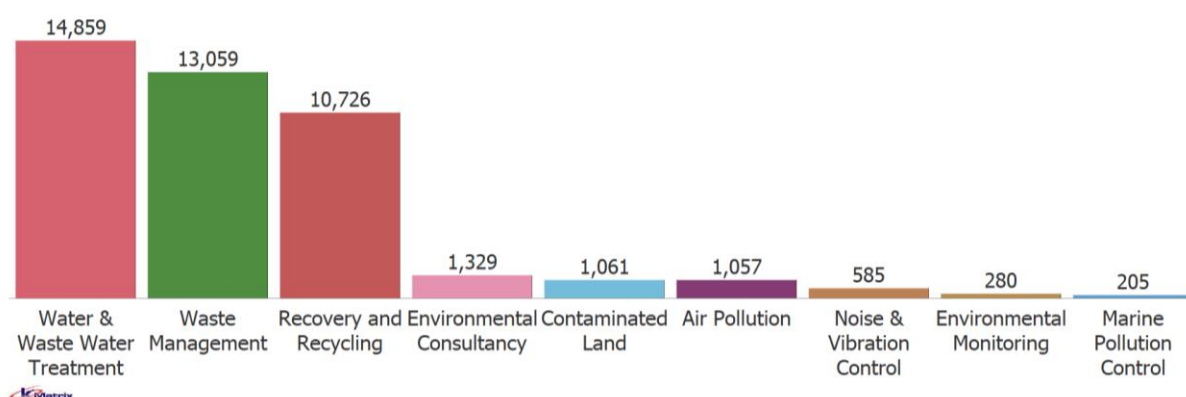
Figure 15: Sales 2019/20 in £m (Level 2)



Environmental is split into nine sub-sectors, of which three account for 89% of sales (Figure 15). These three are made up of Water Supply & Waste Water Treatment 34%, Waste Management 30% and Recovery & Recycling 25%.

Each of these three sub-sectors have grown between 2017/18 and 2019/20: Water Supply and Waste Water Treatment from £1.8bn to £2.0bn; Waste Management from £1.6bn to £1.8bn and Recovery and Recycling from £1.3bn to £1.5bn.

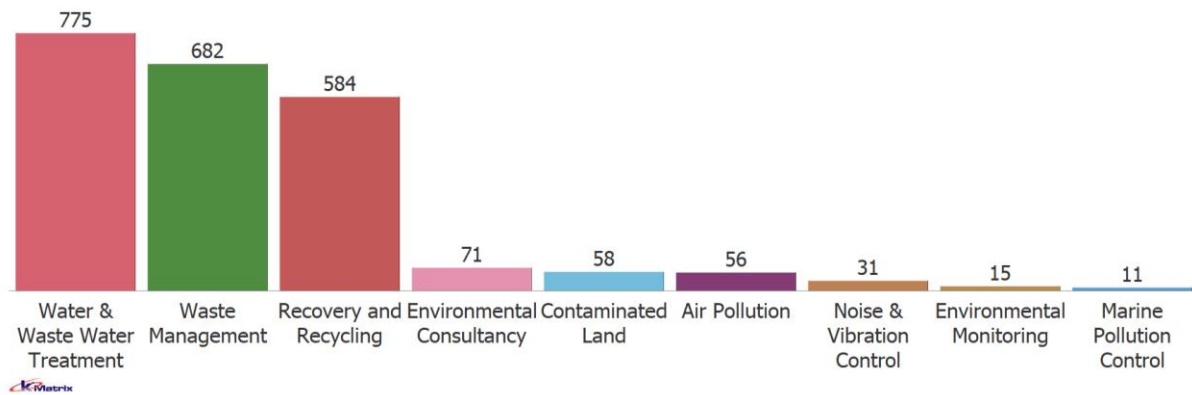
Figure 16: Employment 2019/20 (Level 2)



The same three sub-sectors account for 90% of employment (Figure 16). They are made up of Water Supply & Waste Water Treatment 34%, Waste Management 30% and Recovery & Recycling 25%.

Each of these three sub-sectors have grown between 2017/18 and 2019/20: Water & Waste Water Treatment from 13,391 to 14,859; Waste Management from 11,771 to 13,059 and Recovery and Recycling from 9,671 to 10,726.

Figure 17: Companies 2019/20 (Level 2)



The same three sub-sectors also account for 89% of companies (Figure 17). They are made up of Water Supply & Waste Water Treatment 34%, Waste Management 30% and Recovery & Recycling 26%.

Each of these three sub-sectors have grown between 2017/18 and 2019/20: Water & Waste Water Treatment from 705 to 775; Waste Management from 617 to 682 and Recovery and Recycling from 527 to 584.

1.5.2 Environmental Market at Level 3

Figure 18: Summary of selected metrics for 2019/20 for Waste Management and Water & Waste Water Treatment sub-sectors at Level 3



Figure 18 shows the Sales, Companies and Employees for the Waste Management and Water & Waste Water Treatment Level 2 sub-sectors broken down into their Level 3 sub-sectors.

Water & Waste Water Treatment is made up of four Level 3 sub-sectors, the largest being Water Treatment and Distribution which makes up 77% of sales. Example activities include development and implementation by utilities along with supply, consultancy and implementation by independent consulting engineers.

Waste Management is made up of four Level 3 sub-sectors with sales more evenly distributed across them than for the Water and Waste Water Treatment market. The largest Level 3 sub-sector is Equipment for Waste Treatment which makes up 36% of sales in the market. Example companies are those

involved in development, manufacture and supply. The next largest sub-sector is Construction & Operation of Waste Treatment Facilities which makes up 34% of sales. Example companies are those involved in both public and private operations management and supply and installation of operational equipment.

Figure 19: Summary of selected metrics for 2019/20 for Recovery and Recycling at Level 3

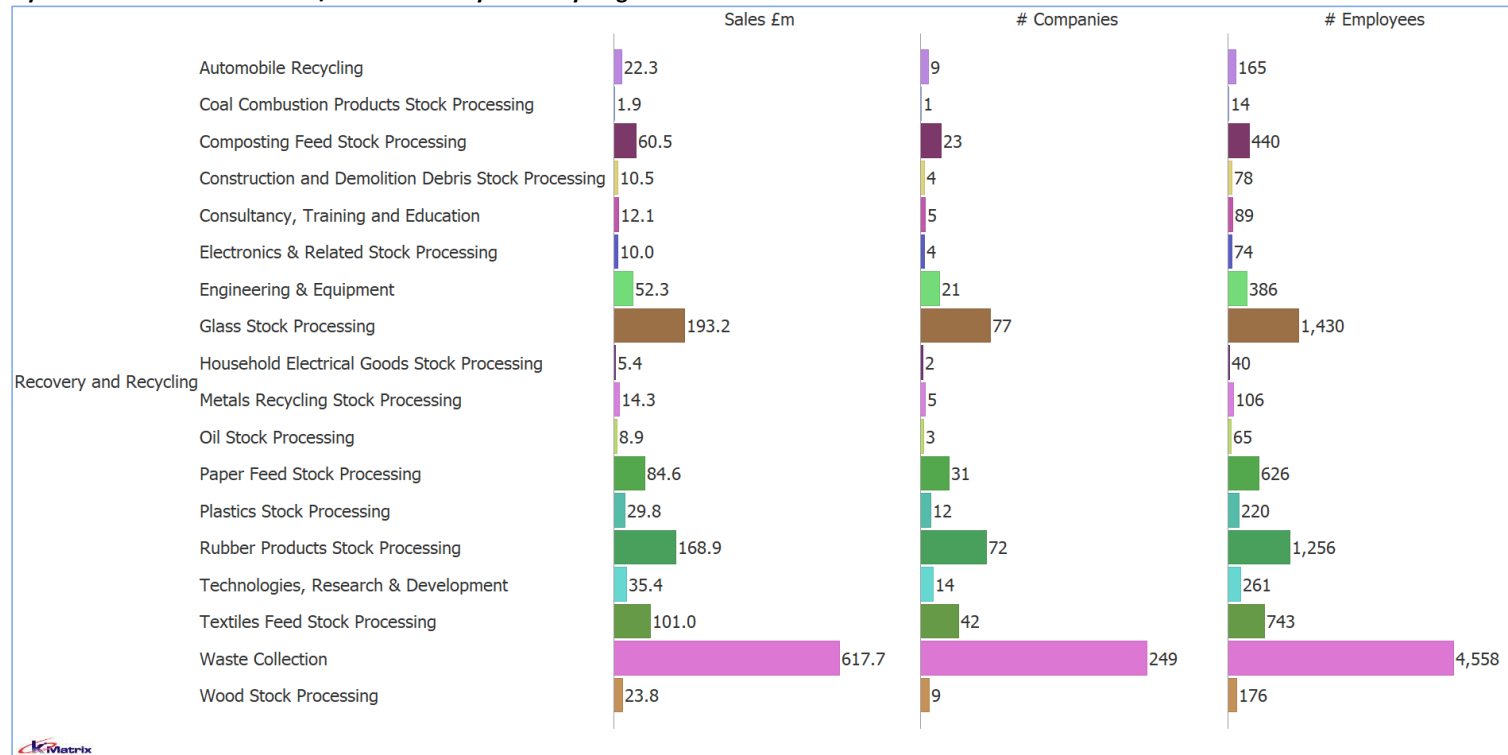


Figure 19 shows the Sales, Companies and Employees for the Level 2 Recovery & Recycling sub-sector broken down into its Level 3 sub-sectors. There are eighteen Level 3 sub-sectors and Waste Collection, including the collection of all waste, both municipal and commercial (landfill and recyclates), is clearly the largest sub-sector making up 43% of all sales in the Recovery and Recycling sub-sector. There are then a number of waste stream stock processing sub-sectors with the largest ones being Glass, Rubber Products, Textiles, Paper and Composting.

1.6 MEH's LCEGS Level 2 Summary

Figure 20 compares all 24 sub-sectors of LCEGS and shows that the five leading sub-sectors: Wind (16%), Building Technologies (15%), Alternative Fuels (14%), Photovoltaic (10%) and Water & Waste Water Treatment (8%) have the largest share in terms of sales, company numbers and employment and accounted for 64% of MEH's LCEGS sector activity in 2019/20.

There is then a second grouping of six sub-sectors that are: Biomass 7%, Waste Management 7%, Alternative Fuel Vehicle 6%, Recovery and Recycling 5%, Geothermal 4% and Energy Management 2%, and that make up a further 31% of the LCEGS sector sales in 2019/20.

These 11 sub-sectors dominate the LCEGS sector sales and together made up 95% of its overall sales in 2019/20.

Figure 20: LCEGS Summary 2019/20 for Sales, Number of Companies and Number of Employees



1.7 MEH and the UK's LCEGS compared

The Midlands Energy Hub Region accounts for 12.1% of the UK's LCEGS sector.

Figure 21: MEG Region Measures 2019/20 by Level 1

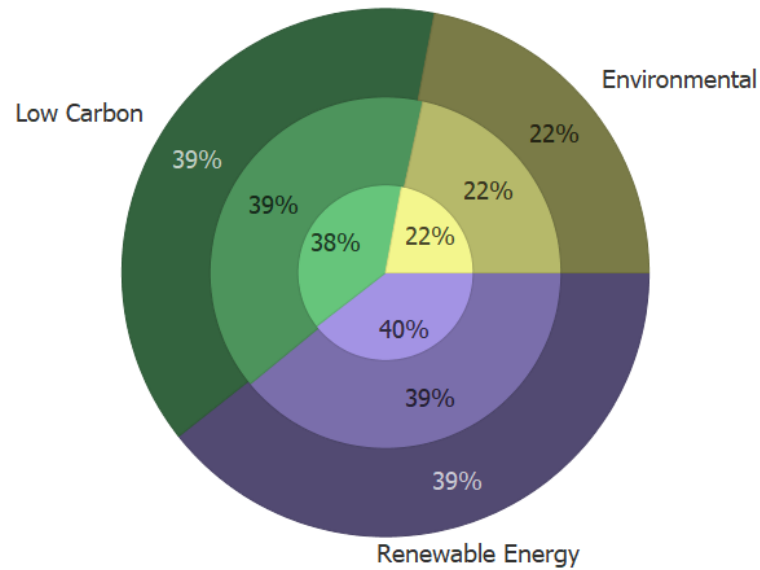
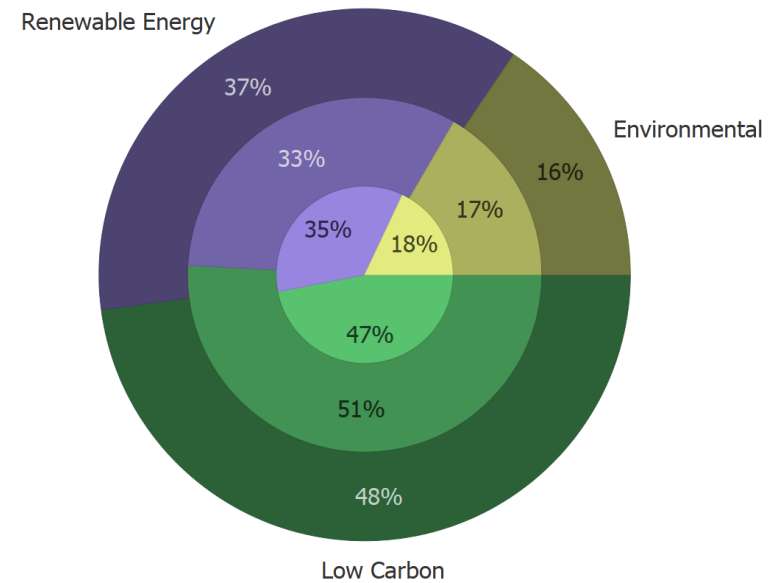


Figure 22: UK Measures 2019/20 by Level 1



Figures 21 and 22 compare the profile of the MEH region and the UK's LCEGS activities at Level 1 for sales (outer circle), companies (middle circle) and employment (inner circle). MEH is stronger in all three measures of sales, number of companies and number of employees for both the Renewable Energy and Environmental Level 1 sub-sectors.

Figure 23: MEH's LCEGS sub-sectors for 2019/20 at Level 2

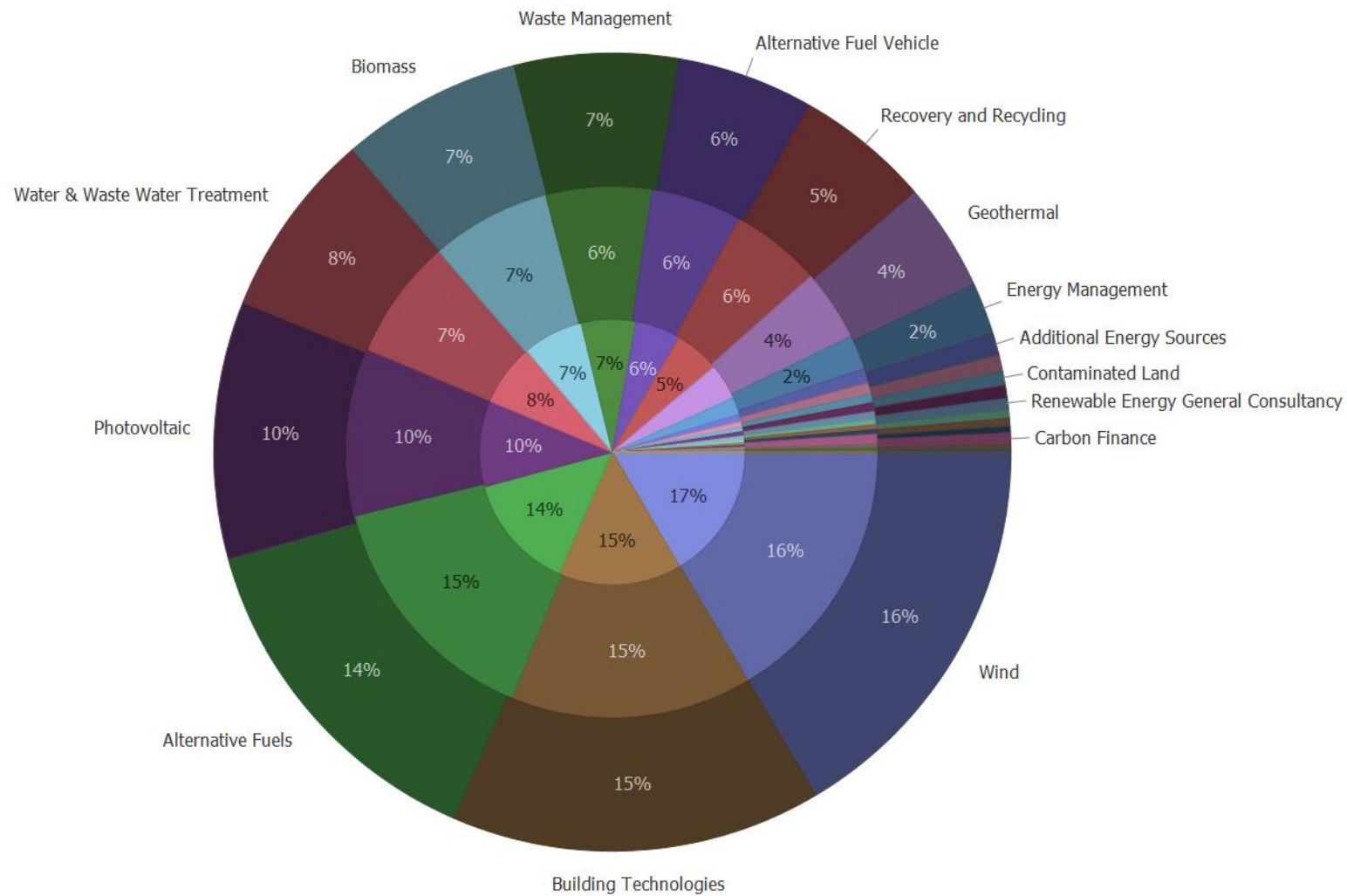
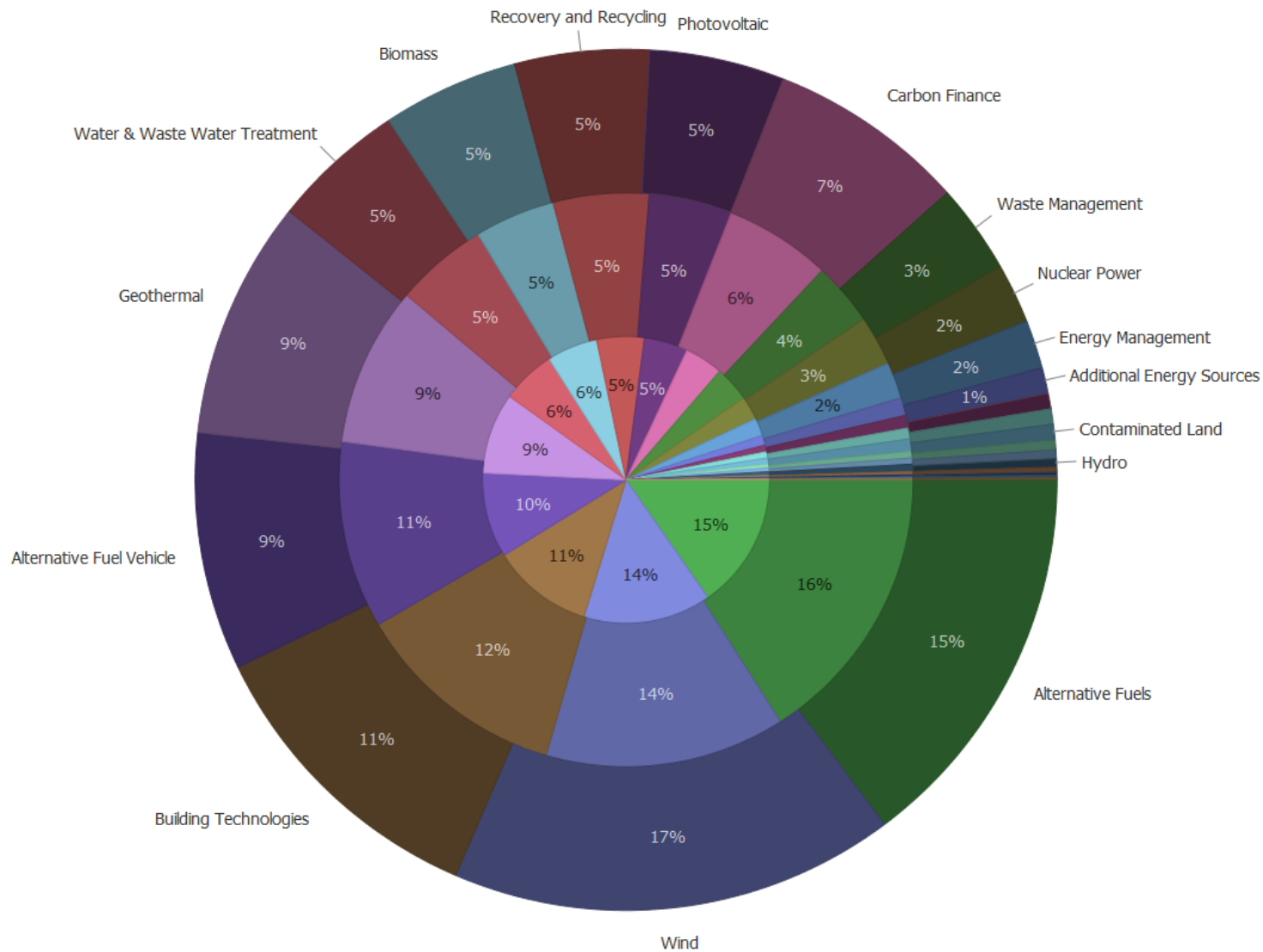


Figure 24: UK's LCEGS sub-sectors for 2019/20 at Level 2



Figures 23 and 24 extends the analysis by comparing the profile of MEH and UK's LCEGS activities at Level 2 for sales (outer circle), companies (middle circle) and employment (inner circle). There are significant differences between the two that gives the MEH region a distinctive LCEGS profile compared to the overall UK profile. Differences include stronger Building Technologies, Photovoltaic, Water & Waste Water Treatment and Waste Management sub-sectors than the UK average and weaker Alternative Fuel Vehicle and Geothermal sub-sectors. Although Carbon Finance is also weaker than the UK average, 97% of the sub-sector is based in the financial district of London, with the only MEH activity in the City of Birmingham.

1.8 MEH's LCEGS Investment in R&D

This section examines the investment profile of the MEH region at the sector level and Level 1 for 2017/18, 2018/19 and 2019/20 and for Level 2 and the top Level 3 subsectors.

Figure 25: MEH's LCEGS Investment in R&D by Fiscal Year

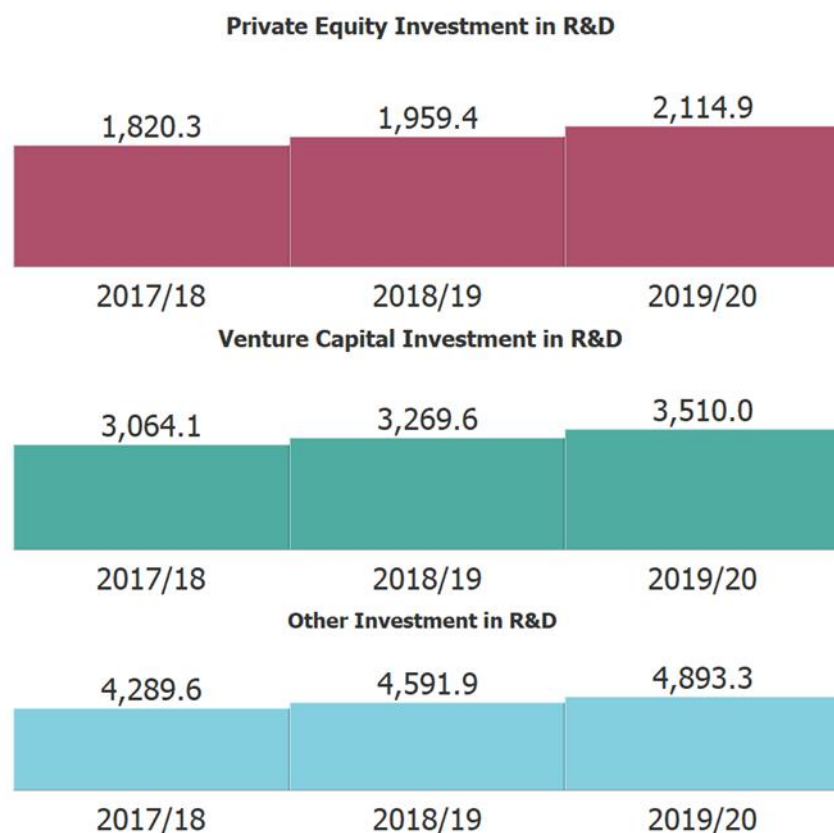


Figure 25 shows the investment for the three financial years of the sector study, made into the whole LCEGS sector.

Private Equity Investment has grown from £1.8bn in 2017/18 to £2.1bn in 2019/20, representing 7.6% growth between 2017/18 and 2018/19 and 7.9% growth between 2018/19 and 2019/20.

Venture Capital Investment has grown from £3.1bn in 2017/18 to £3.5bn in 2019/20, representing 6.7% growth between 2017/18 and 2018/19 and 7.4% growth between 2018/19 and 2019/20.

Other Investment has grown from £4.3bn in 2017/18 to £4.9bn in 2019/20, representing 7.0% growth between 2017/18 and 2018/19 and 6.6% growth between 2018/19 and 2019/20.

Figure 26: MEH's LCEGS Investment in R&D by Fiscal Year – Level 1

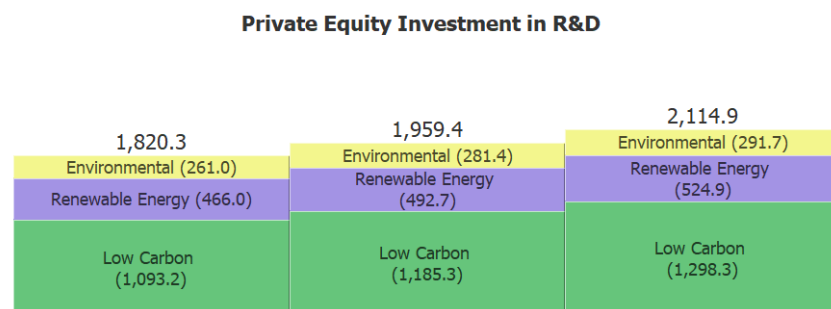
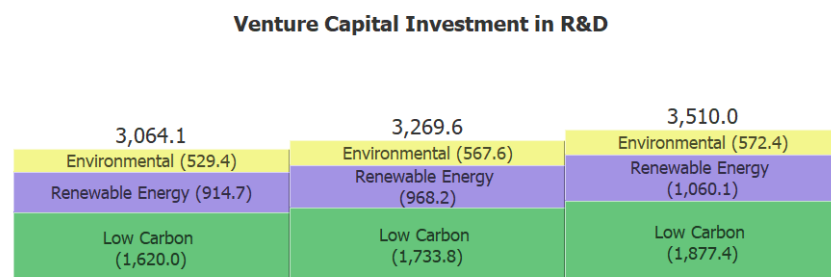
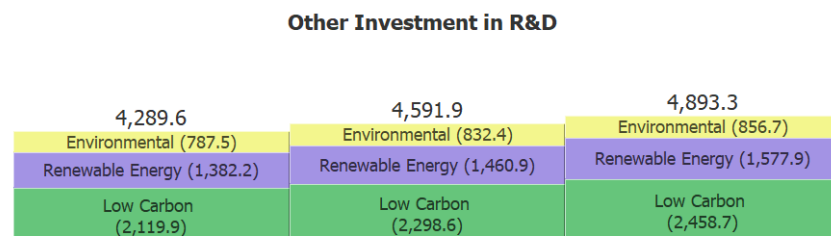


Figure 26 shows the investment for the three financial years of the sector study, made into the LCEGS sector, split into Level 1.

Private Equity Investment was split in 2019/20 Renewable Energy 25%, Low Carbon 61% and Environmental 14%. This is markedly different to the sales split of 39%, 39% and 22%.



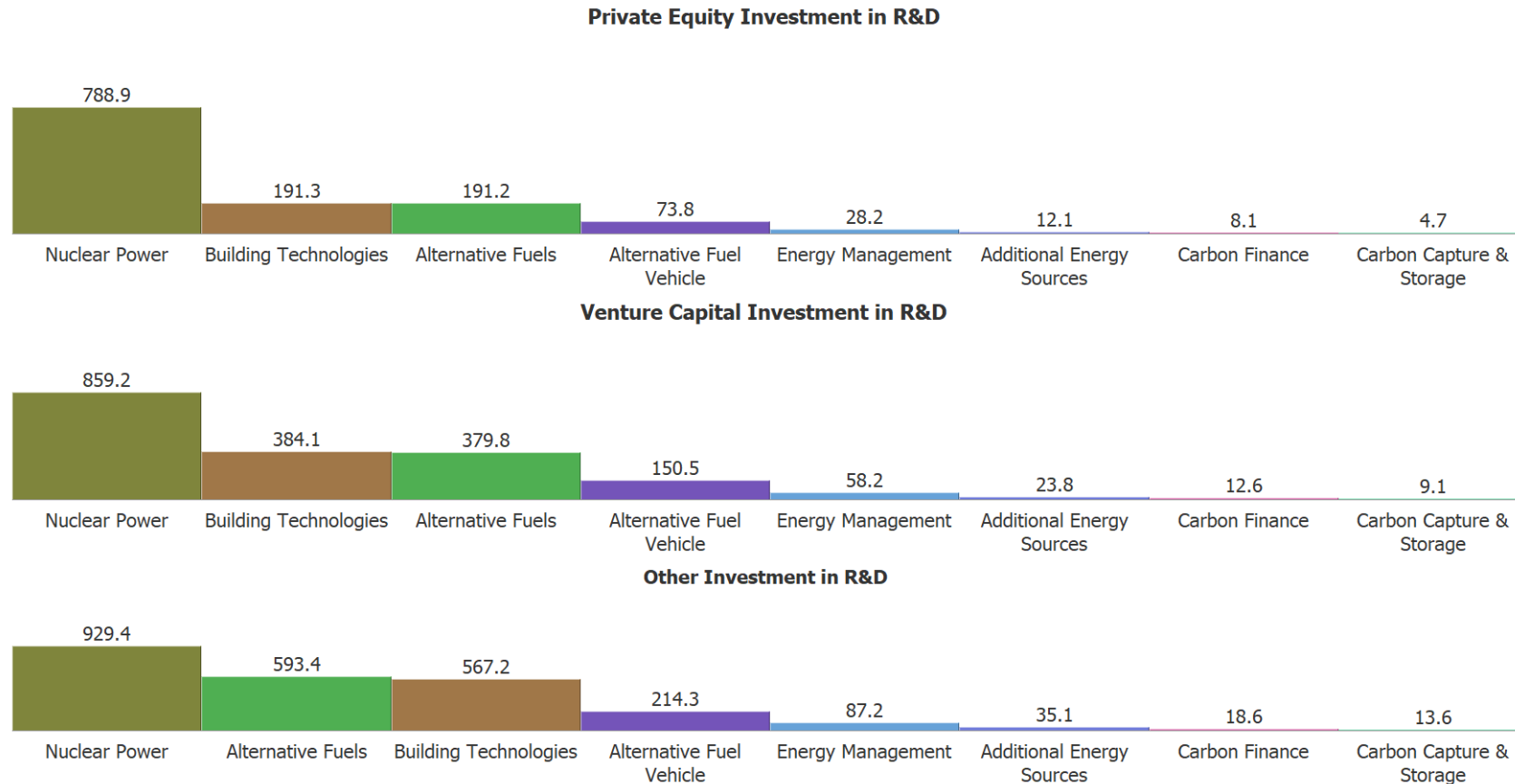
Venture Capital Investment was split in 2019/20 Renewable Energy 30%, Low Carbon 53% and Environmental 16%. This is markedly different to the sales split of 39%, 39% and 22%.



Other Investment was split in 2019/20 Renewable Energy 32%, Low Carbon 50% and Environmental 18%. This is markedly different to the sales split of 39%, 39% and 22%.

The large investment within the Low Carbon sub-sector is due to high investment in Nuclear, which is not in the top 11 sub-sectors with regards to sales. As such, we will include the Level 2 Nuclear sub-sector within the Low carbon investment analysis.

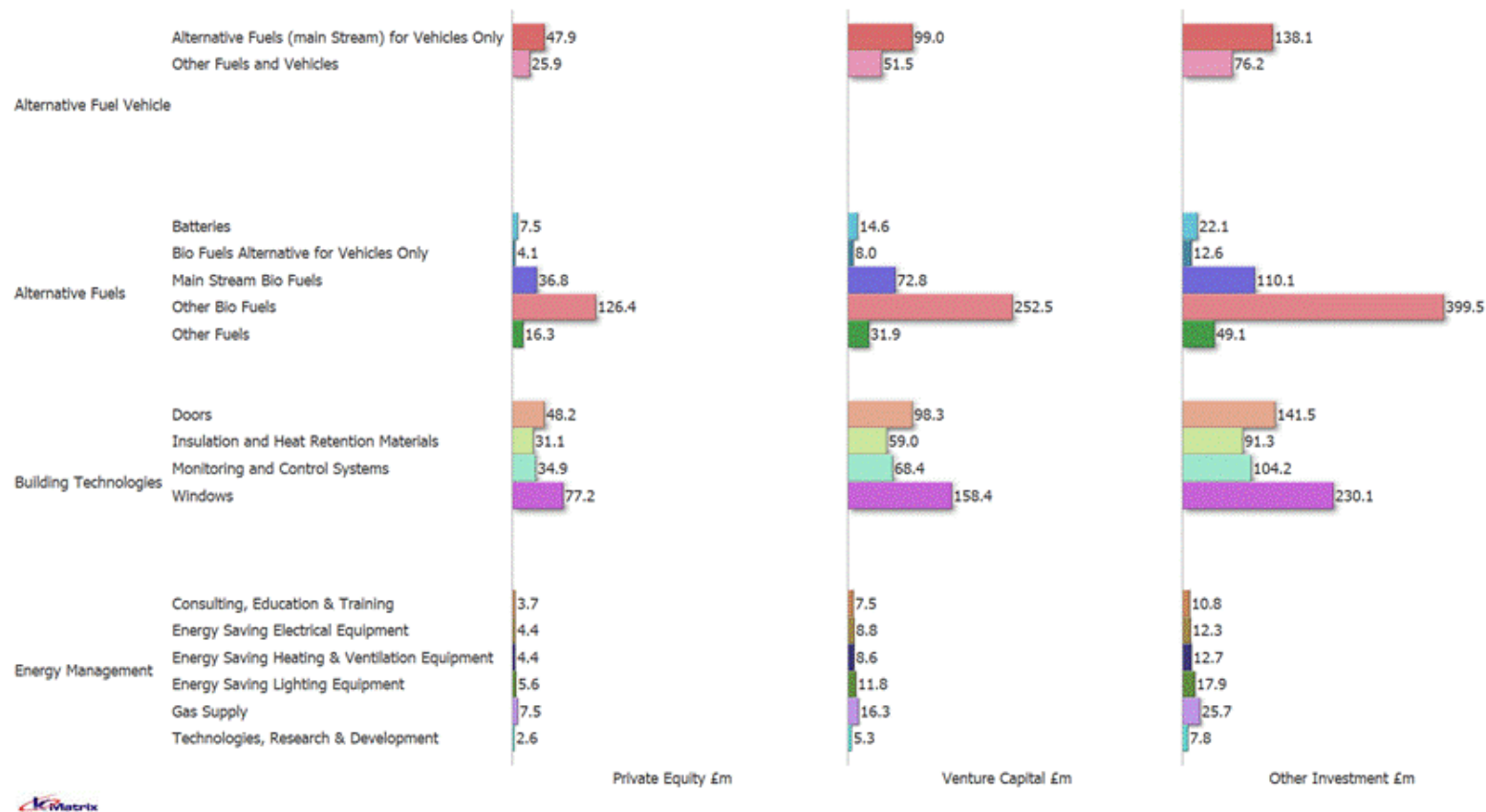
Figure 27: MEH's LCEGS Investment in R&D 2019/20 – Level 2 Low Carbon



Investment for each of the top four Low Carbon sub-sectors and Nuclear grew between 2017/18 and 2019/20:

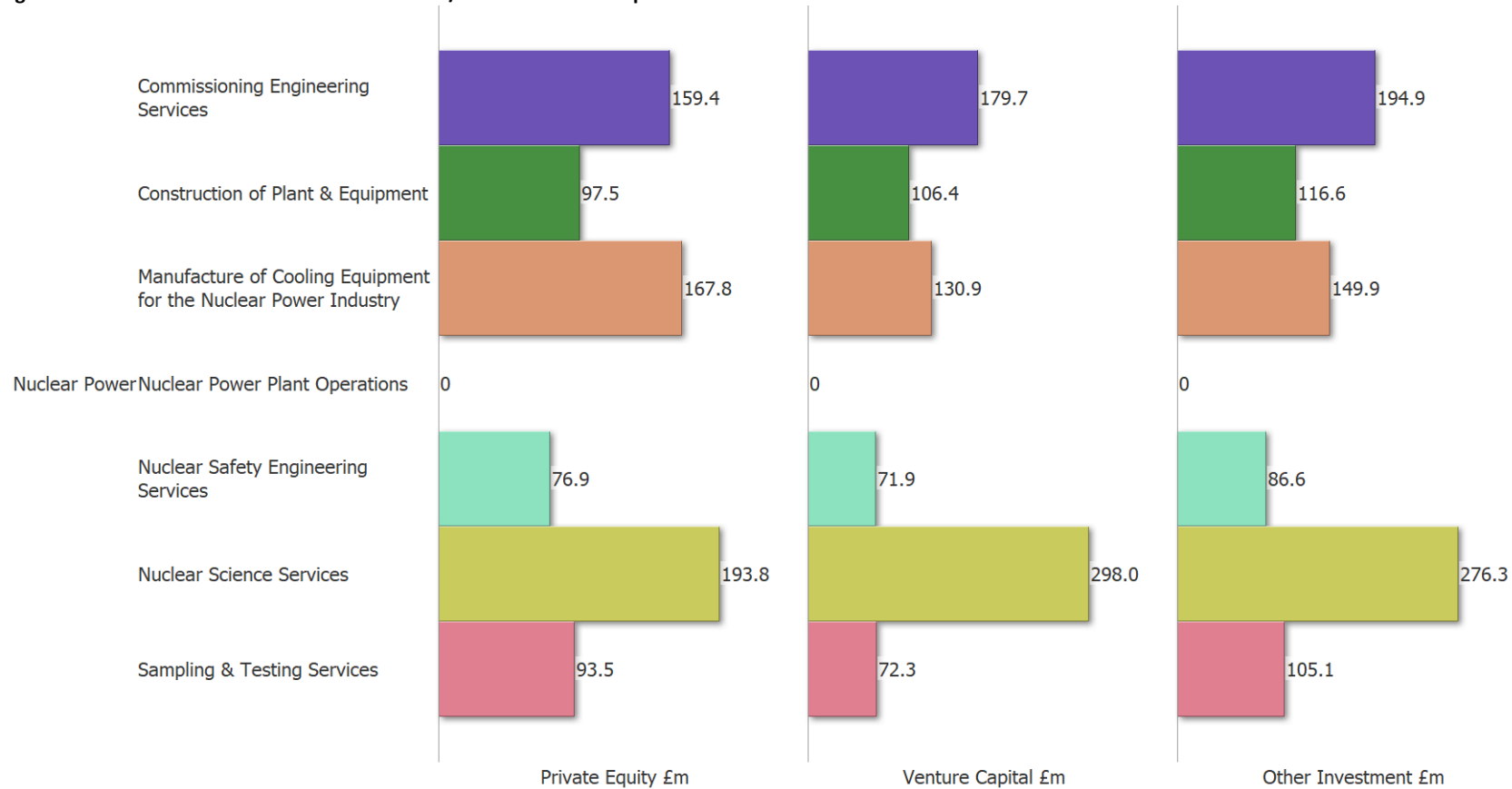
- Nuclear from £639m to £789m for Private Equity, £696m to £859m for Venture Capital and £753m to £929m for Other Investment
- Building Technologies from £173m to £191m for Private Equity, £354m to £384m for Venture Capital and £524m to £567m for Other Investment
- Alternative Fuels from £167m to £191m for Private Equity, £333m to £380m for Venture Capital and £507m to £567m for Other Investment
- Alternative Fuel Vehicle from £69m to £74m for Private Equity, £144m to £151m for Venture Capital and £197m to £214m for Other Investment
- Energy Management from £25m to £28m for Private Equity, £52m to £58m for Venture Capital and £77m to £87m for Other Investment

Figure 28a: MEH's LCEGS Investment in R&D 2019/20 – Low Carbon top Level 3 sub-sectors – Alternative Fuel Vehicle, Alternative Fuels, Building Technologies and Energy Management



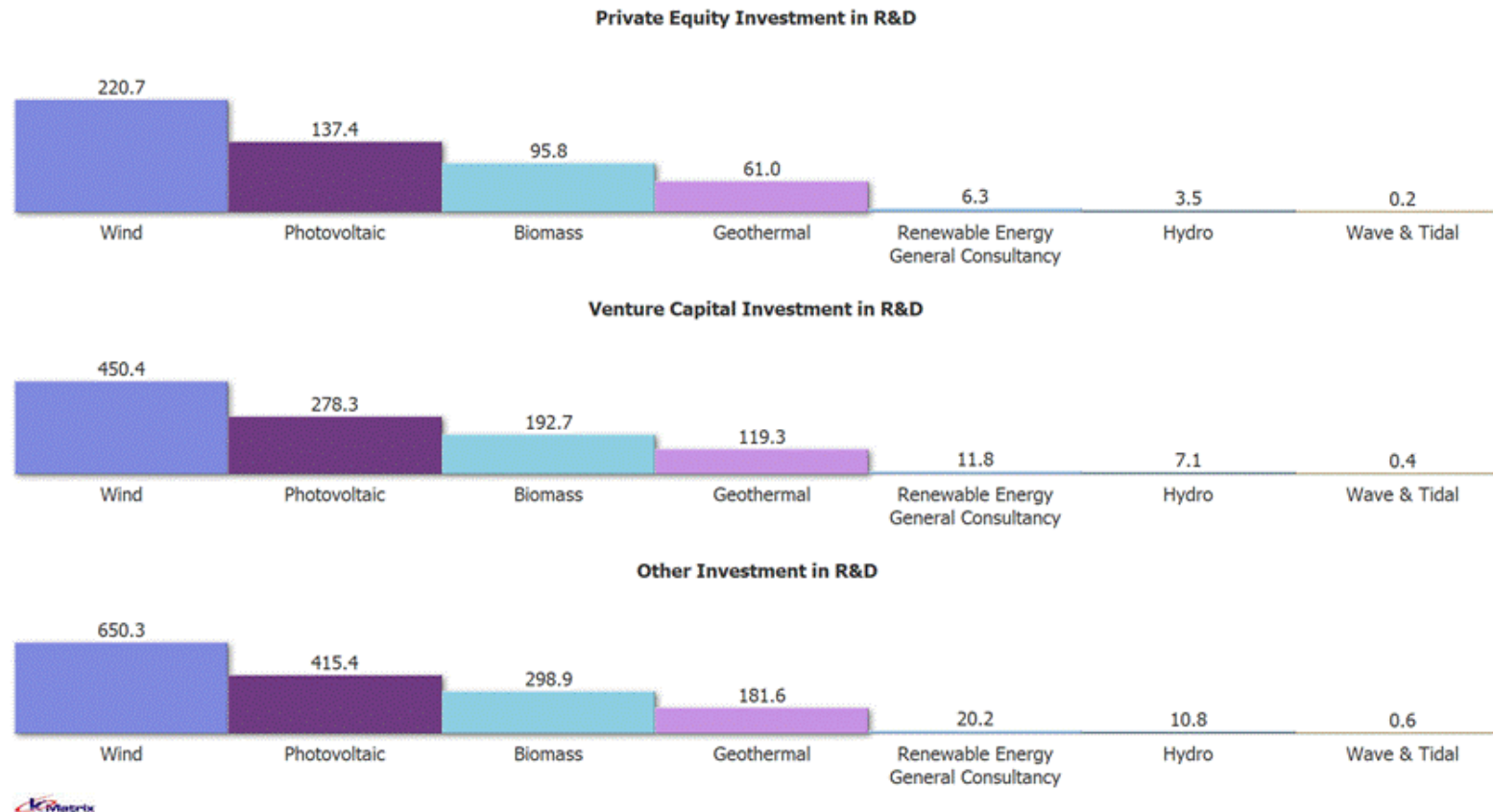
Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Low Carbon have grown between 2017/18 and 2019/20. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 2.3.

Figure 28b: MEH's LCEGS Investment in R&D 2019/20 – Low Carbon top Level 3 sub-sector - Nuclear



Investment for the Level 3 sub-sectors of the Nuclear Level 2 sub-sector within Low Carbon have grown between 2017/18 and 2019/20. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern.

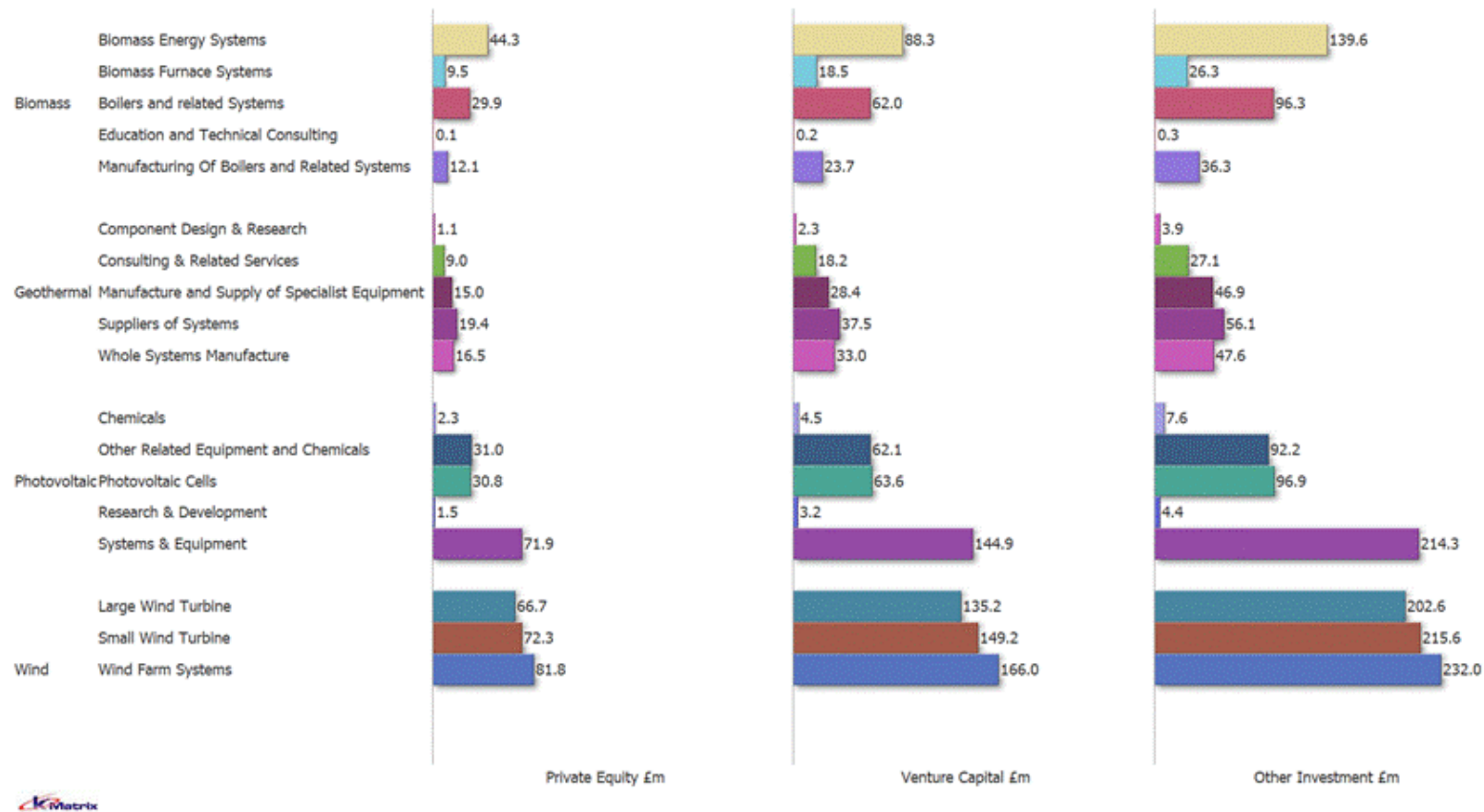
Figure 29: MEH's LCEGS Investment in R&D 2019/20 – Level 2 Renewable Energy



Investment for each of the top four Renewable Energy sub-sectors grew between 2017/18 and 2019/20:

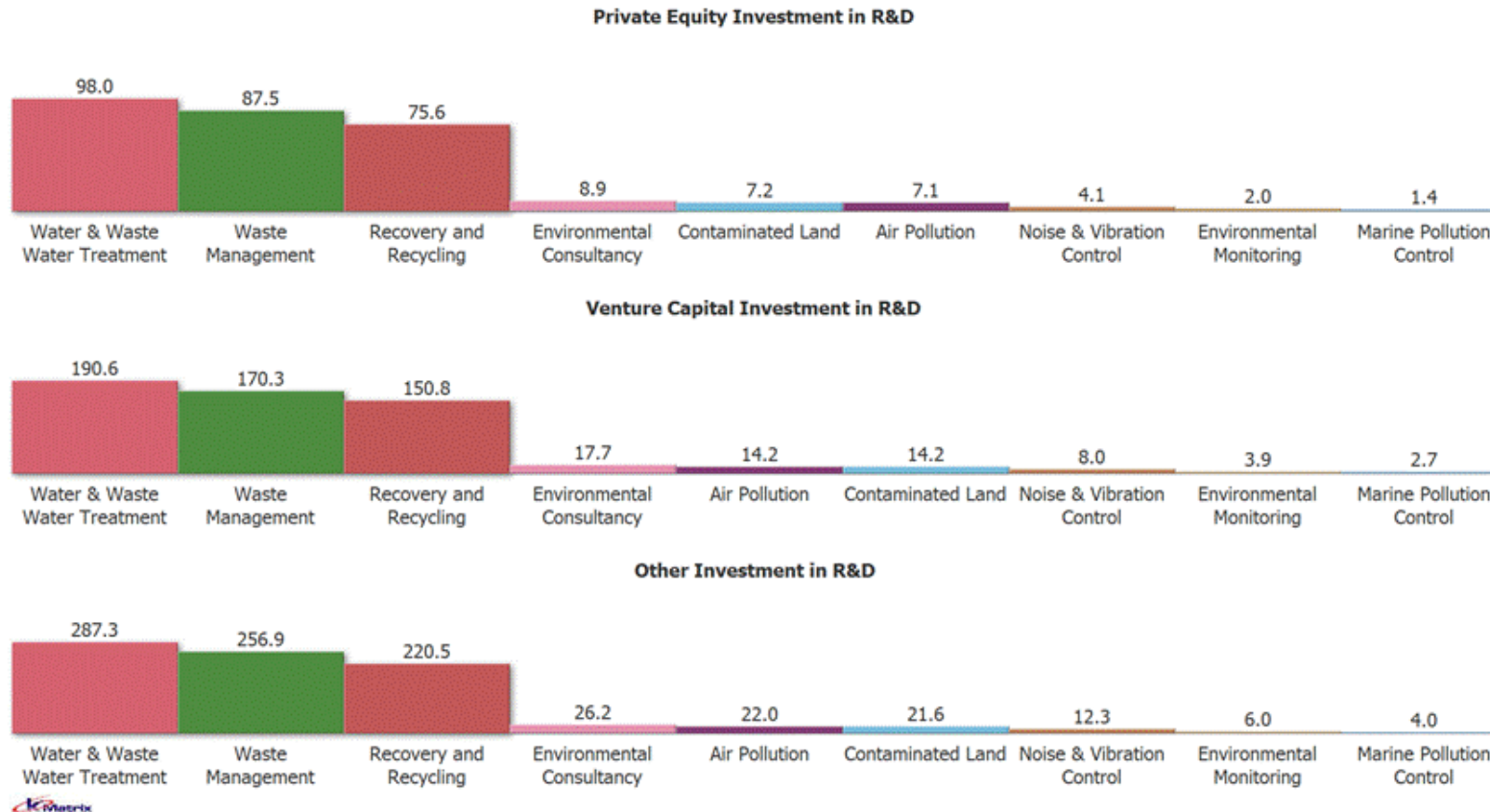
- Wind from £195m to £221m for Private Equity, £384m to £450m for Venture Capital and £580m to £650m for Other Investment
- Photovoltaic from £124m to £137m for Private Equity, £243m to £278m for Venture Capital and £367m to £415m for Other Investment
- Biomass from £87m to £96m for Private Equity, £167m to £193m for Venture Capital and £257m to £299m for Other Investment
- Geothermal from £51m to £61m for Private Equity, £101m to £119m for Venture Capital and £151m to £182m for Other Investment

Figure 30: MEH's LCEGS Investment in R&D 2019/20 – Renewable Energy top Level 3 sub-sectors



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Renewable Energy have grown between 2017/18 and 2019/20. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 2.4.

Figure 31: MEH's LCEGS Investment in R&D by 2019/20 – Level 2 Environmental

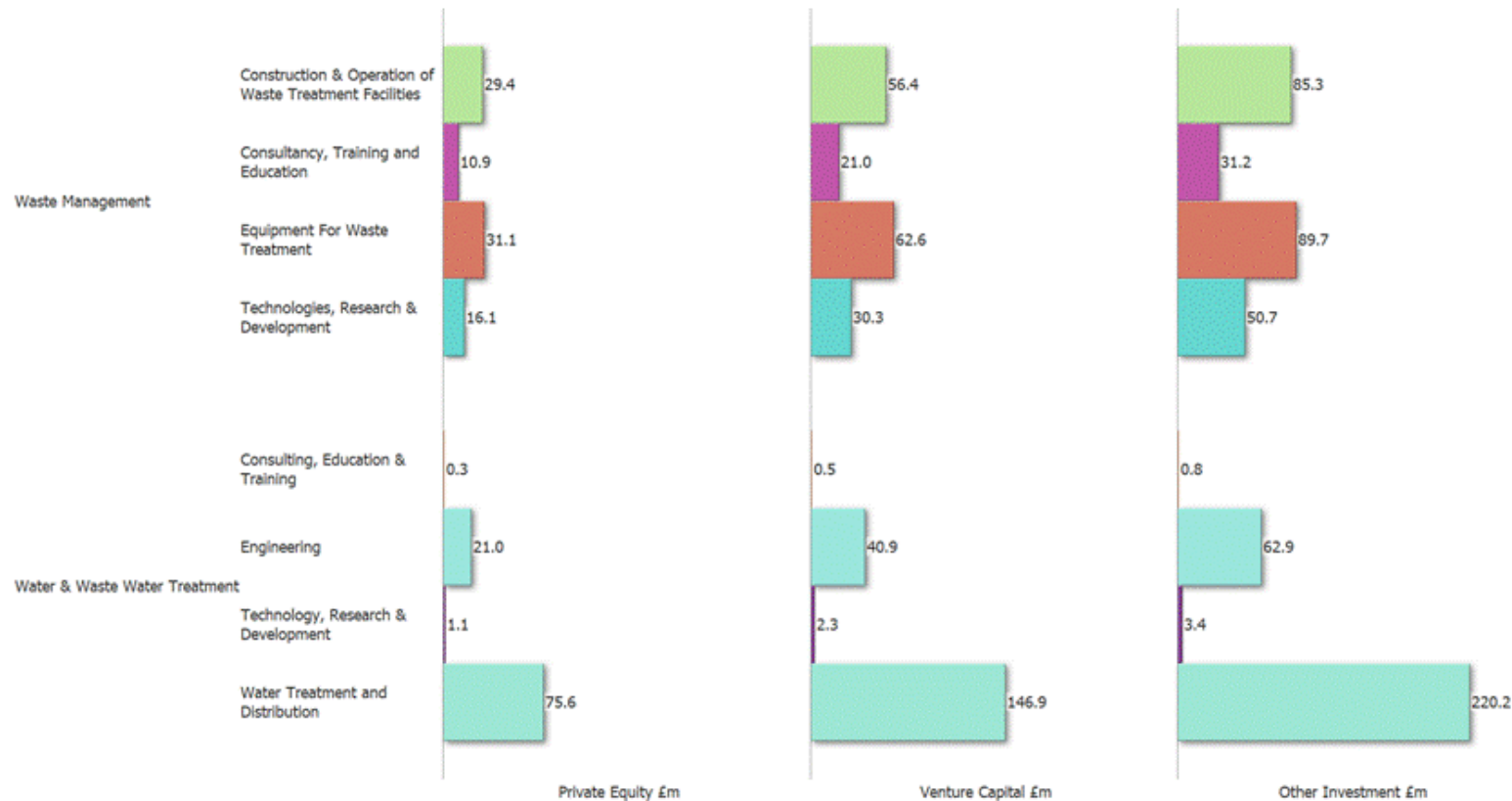


Investment for each of the top three Environmental sub-sectors grew between 2017/18 and 2019/20:

- Water & Waste Water Treatment from £90m to £98m for Private Equity, £181m to £191m for Venture Capital and £270m to £287m for Other Investment
- Waste Management from £78m to £88m for Private Equity, £162m to £170m for Venture Capital and £240m to £257m for Other Investment

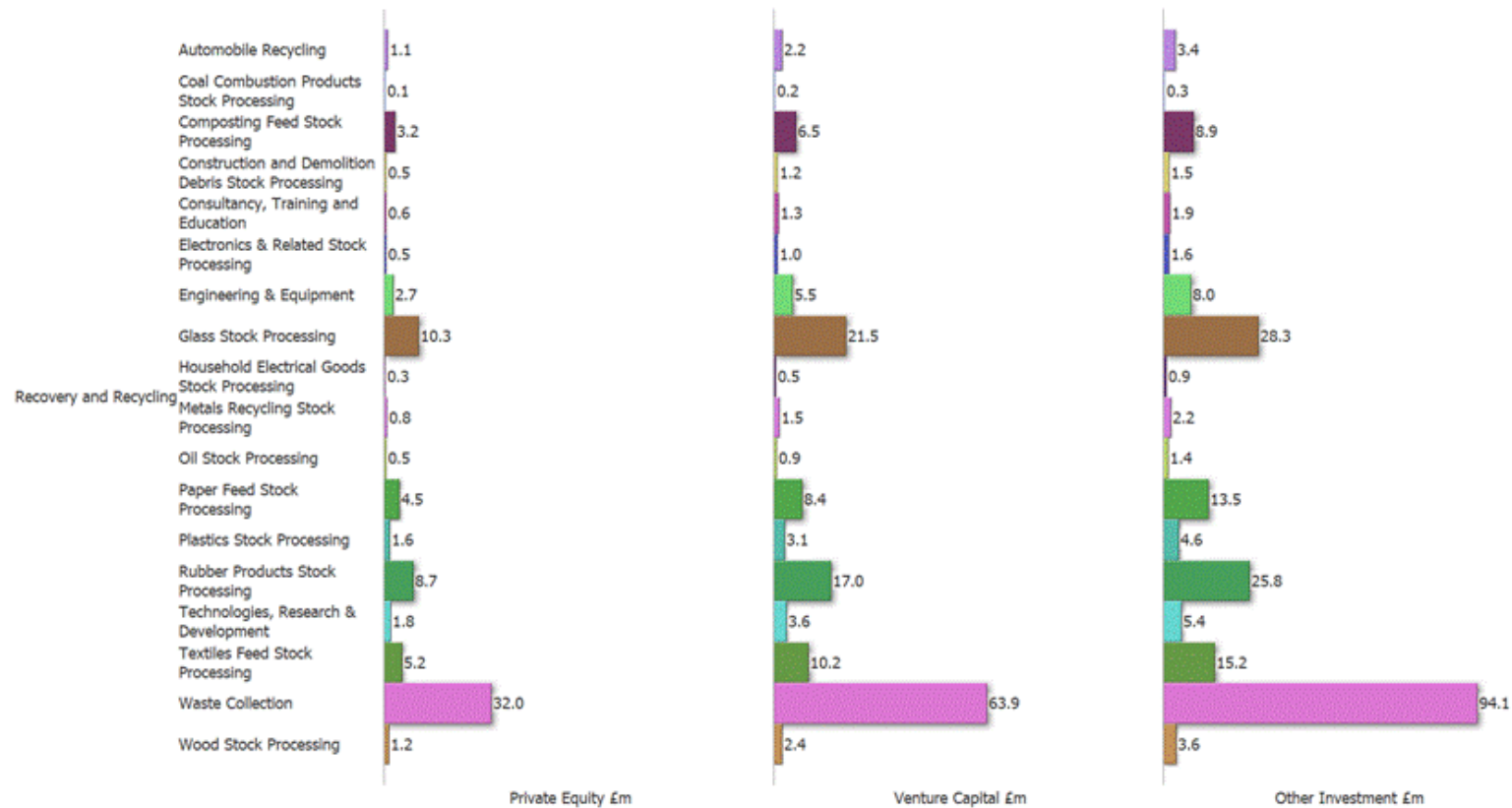
- Recovery and Recycling from £66m to £76m for Private Equity, £132m to £151m for Venture Capital and £194m to £221m for Other Investment

Figure 32: MEH's LCEGS Investment in R&D 2019/20 – Environmental top Level 3 sub-sectors, Waste Management and Water and Waste Water Treatment



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Environmental have grown between 2017/18 and 2019/20. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 2.5.

Figure 33: MEH's LCEGS Investment in R&D 2019/20 – Environmental top Level 3 sub-sectors, Recovery and Recycling



Investment for the Level 3 sub-sectors of the top Level 2 sub-sectors within Environmental have grown between 2017/18 and 2019/20. The pattern of investment for Private Equity, Venture Capital and Other Investment is similar to the Sales pattern in section 2.5.

1.9 MEH's LCEGS Company Size

In this section we look at the number of companies within the MEH region, split by size of company, using the standard classification of company size. Growth between one year and the next is shown in red.

Company size classifications:

- Start-up = any company formed during the previous 12 months, for 2017/18 that would include companies formed during 2016/17 and so on
- Micro = companies with 2-9 employees
- SME = Small and Medium-sized companies, with 10-249 employees
- Large = companies with 250-1,500 employees
- Corporations = any company with 1,501 or more employees
- Total Companies = the total company count

Start-ups listed in 2017/18 will have been formed in 2016/17, those listed in 2018/19 will have been formed in 2017/18 and those in 2019/20 will have been formed in 2018/19. Start-up companies are a discrete category, not dependent on number of employees and are not double counted in the other categories.

Table 1 shows the company count for the LCEGS sector across the MEH, split by Start-up, Micro, SME, Large and Corporations, with the Total Number of Companies for reference. The table is also split by Level 1, providing both a sector and Level 1 overview.

Table 1: MEH's LCEGS Number of Companies Split by Company Size, with Growth 2017/18 to 2019/20 – Level 1

# Start-up						# Micro					# SMEs				
Level 1	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Environmental	103	3.9%	107	6.5%	114	619	3.7%	642	6.5%	684	1,032	3.6%	1,069	6.8%	1,142
Low Carbon	191	2.6%	196	7.7%	211	1,131	3.2%	1,167	7.1%	1,250	1,875	3.9%	1,949	6.9%	2,083
Renewable Energy	186	4.3%	194	6.2%	206	1,118	4.0%	1,163	6.7%	1,241	1,864	3.4%	1,928	7.1%	2,064
Total	480	3.5%	497	6.8%	531	2,868	3.6%	2,972	6.8%	3,175	4,771	3.7%	4,946	6.9%	5,289
# Large						# Corporations					Total # Companies				
Level 1	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Environmental	206	3.9%	214	6.5%	228	103	3.9%	107	6.5%	114	2,064	3.6%	2,139	6.7%	2,282
Low Carbon	375	4.3%	391	6.6%	417	187	3.2%	193	7.8%	208	3,759	3.6%	3,896	6.9%	4,166
Renewable Energy	374	3.7%	388	6.7%	414	186	3.8%	193	7.3%	207	3,728	3.7%	3,865	6.9%	4,133
Total	955	4.0%	993	6.6%	1,059	476	3.6%	493	7.3%	529	9,551	3.7%	9,900	6.9%	10,581

Table 1 shows that the growth in the number of companies per size grouping is similar across the Level 1 sub-sectors, with growth between 2018/19 and 2019/20 being stronger in all size groupings than the previous year.

The strongest growth between 2018/19 and 2019/20 of 7.8% was seen in corporations for Low Carbon and 7.7% for Start-ups in the Low Carbon sub-sectors, with the weakest growth of 6.2% was seen in Start-ups in the Renewable Energy sub-sector.

Tables 2a and 2b show the company count for the LCEGS sector across the MEH, split by Start-up, Micro, SME, Large and Corporations, with the Total Number of Companies again for reference. The table is also split by Level 2.

Table 2a: MEH's LCEGS Number of Companies Split by Company Size, with Growth 2017/18 to 2019/20 – Level 2

Level 1	Level 2	# Start-up					# Micro					# SMEs				
		Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
		2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Environmental	Air Pollution	3	0.0%	3	0.0%	3	15	6.7%	16	6.3%	17	25	4.0%	26	7.7%	28
Environmental	Contaminated Land	3	0.0%	3	0.0%	3	16	0.0%	16	6.3%	17	26	3.8%	27	7.4%	29
Environmental	Environmental Consultancy	3	0.0%	3	33.3%	4	19	5.3%	20	5.0%	21	32	3.1%	33	9.1%	36
Environmental	Environmental Monitoring	1	0.0%	1	0.0%	1	4	0.0%	4	25.0%	5	7	0.0%	7	14.3%	8
Environmental	Marine Pollution Control	0	100.0%	1	0.0%	1	3	0.0%	3	0.0%	3	5	0.0%	5	0.0%	5
Environmental	Noise & Vibration Control	1	0.0%	1	100.0%	2	8	12.5%	9	0.0%	9	14	7.1%	15	6.7%	16
Environmental	Recovery and Recycling	26	3.8%	27	7.4%	29	158	3.8%	164	6.7%	175	264	3.4%	273	6.6%	291
Environmental	Waste Management	31	3.2%	32	6.3%	34	185	3.8%	192	6.3%	204	308	3.6%	319	6.9%	341
Environmental	Water & Waste Water Treatment	35	2.9%	36	8.3%	39	210	3.8%	218	6.4%	232	351	3.4%	363	6.9%	388
Low Carbon	Additional Energy Sources	4	0.0%	4	25.0%	5	25	4.0%	26	7.7%	28	42	4.8%	44	4.5%	46
Low Carbon	Alternative Fuel Vehicle	26	3.8%	27	7.4%	29	159	3.1%	164	7.3%	176	264	3.8%	274	6.6%	292
Low Carbon	Alternative Fuels	72	1.4%	73	8.2%	79	433	2.1%	442	7.2%	474	712	3.9%	740	7.3%	794
Low Carbon	Building Technologies	70	4.3%	73	6.8%	78	421	3.8%	437	7.1%	468	705	3.5%	730	6.6%	778
Low Carbon	Carbon Capture & Storage	2	0.0%	2	0.0%	2	10	0.0%	10	10.0%	11	16	6.3%	17	5.9%	18
Low Carbon	Carbon Finance	3	0.0%	3	0.0%	3	17	5.9%	18	11.1%	20	18	66.7%	30	6.7%	32
Low Carbon	Energy Management	10	0.0%	10	10.0%	11	60	3.3%	62	8.1%	67	100	4.0%	104	6.7%	111
Low Carbon	Nuclear Power	3	0.0%	3	33.3%	4	5	20.0%	6	16.7%	7	8	12.5%	9	22.2%	11
Renewable Energy	Biomass	35	2.9%	36	8.3%	39	209	4.3%	218	6.9%	233	350	3.1%	361	6.9%	386
Renewable Energy	Geothermal	21	4.8%	22	4.5%	23	125	4.0%	130	6.2%	138	208	3.4%	215	7.0%	230
Renewable Energy	Hydro	1	0.0%	1	0.0%	1	8	0.0%	8	12.5%	9	13	7.7%	14	7.1%	15
Renewable Energy	Photovoltaic	49	2.0%	50	8.0%	54	291	3.8%	302	7.0%	323	486	3.7%	504	6.5%	537
Renewable Energy	Renewable Consultancy	2	0.0%	2	0.0%	2	13	7.7%	14	7.1%	15	22	4.5%	23	4.3%	24
Renewable Energy	Wave & Tidal	0	0	0	0	0	0	0	0	0	0	1	0.0%	1	0.0%	1
Renewable Energy	Wind	78	5.1%	82	6.1%	87	471	4.2%	491	6.5%	523	785	3.4%	812	7.4%	872
Total		479	3.3%	495	7.7%	533	2,865	3.7%	2,970	6.9%	3,175	4,762	3.9%	4,946	6.9%	5,289

Table 2b: MEH's LCEGS Number of Companies Split by Company Size, with Growth 2017/18 to 2019/20 – Level 2

Level 1	Level 2	# Large					# Corporations					Total # Companies				
		Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
		2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Environmental	Air Pollution	5	0.0%	5	20.0%	6	3	0.0%	3	0.0%	3	51	3.9%	53	5.7%	56
Environmental	Contaminated Land	5	0.0%	5	20.0%	6	3	0.0%	3	0.0%	3	52	3.8%	54	7.4%	58
Environmental	Environmental Consultancy	6	16.7%	7	0.0%	7	3	0.0%	3	33.3%	4	64	3.1%	66	7.6%	71
Environmental	Environmental Monitoring	1	0.0%	1	100.0%	2	1	0.0%	1	0.0%	1	14	0.0%	14	7.1%	15
Environmental	Marine Pollution Control	1	0.0%	1	0.0%	1	0	100.0%	1	0.0%	1	10	0.0%	10	10.0%	11
Environmental	Noise & Vibration Control	3	0.0%	3	0.0%	3	1	0.0%	1	100.0%	2	28	3.6%	29	6.9%	31
Environmental	Recovery and Recycling	53	3.8%	55	5.5%	58	26	3.8%	27	7.4%	29	527	3.6%	546	7.0%	584
Environmental	Waste Management	62	3.2%	64	6.3%	68	31	3.2%	32	6.3%	34	617	3.6%	639	6.7%	682
Environmental	Water & Waste Water Treatment	70	4.3%	73	5.5%	77	35	2.9%	36	8.3%	39	702	3.6%	727	6.6%	775
Low Carbon	Additional Energy Sources	8	12.5%	9	0.0%	9	4	0.0%	4	25.0%	5	84	3.6%	87	6.9%	93
Low Carbon	Alternative Fuel Vehicle	53	3.8%	55	7.3%	59	27	0.0%	27	7.4%	29	528	3.8%	548	6.9%	586
Low Carbon	Alternative Fuels	141	5.0%	148	6.1%	157	71	2.8%	73	8.2%	79	1,429	3.4%	1,477	7.2%	1,584
Low Carbon	Building Technologies	141	3.5%	146	6.8%	156	71	2.8%	73	6.8%	78	1,407	3.7%	1,459	6.8%	1,558
Low Carbon	Carbon Capture & Storage	3	0.0%	3	33.3%	4	2	0.0%	2	0.0%	2	33	3.0%	34	5.9%	36
Low Carbon	Carbon Finance	6	0.0%	6	0.0%	6	3	0.0%	3	0.0%	3	57	7.0%	61	6.6%	65
Low Carbon	Energy Management	20	5.0%	21	4.8%	22	10	0.0%	10	10.0%	11	201	3.5%	208	6.7%	222
Low Carbon	Nuclear Power	2	50.0%	3	0.0%	3	0	100.0%	1	0.0%	1	19	15.8%	22	4.5%	23
Renewable Energy	Biomass	70	4.3%	73	5.5%	77	35	2.9%	36	8.3%	39	698	3.7%	724	6.9%	774
Renewable Energy	Geothermal	41	4.9%	43	7.0%	46	21	4.8%	22	4.5%	23	415	3.6%	430	7.0%	460
Renewable Energy	Hydro	3	0.0%	3	0.0%	3	1	0.0%	1	0.0%	1	27	3.7%	28	3.6%	29
Renewable Energy	Photovoltaic	97	4.1%	101	6.9%	108	48	4.2%	50	8.0%	54	971	3.7%	1,007	6.8%	1,075
Renewable Energy	Renewable Consultancy	4	25.0%	5	0.0%	5	2	0.0%	2	0.0%	2	44	2.3%	45	8.9%	49
Renewable Energy	Wave & Tidal	0	0	0	0	0	0	0	0	0	0	1	100.0%	2	0.0%	2
Renewable Energy	Wind	158	3.8%	164	6.7%	175	78	3.8%	81	8.6%	88	1,570	3.8%	1,629	7.1%	1,745
Total		953	4.3%	994	6.4%	1,058	476	3.4%	492	7.9%	531	9,549	3.7%	9,899	6.9%	10,584

Table 2 shows that the growth in the number of companies per size grouping is also similar across the Level 2 sub-sectors, with growth between 2018/19 and 2019/20 being stronger in all size groupings than the previous year.

Growth between sub-sectors is more variable at Level 2 than for Level 1, with the strong growth between 2018/19 and 2019/20 of 8.2% seen in Start-ups and Corporations within the Alternative Fuels sub-sectors, for example. Weaker growth of 4.5% was seen in Start-ups and Corporations in Geothermal and SME's within the Additional Energy Sources.

1.10 MEH's LCEGS by Skills

In this section we look at the skills within the MEH region, through the number of employees listed in accordance with Standard Occupational Classification 2020 Index. This data will be overlaid with demand mapping during the Policy development and Growth forecasting phase of the study. Table 3 shows the number of employees within each standard Occupational Class for the LCEGS sector as a whole, per year.

Table 3: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – LCEGS Sector

Skill	LCEGS Sector Totals				
	Growth		Growth		2019/20
	2017/18	%	2018/19	%	
Technicians	4,305	8.8%	4,686	0.5%	4,707
Snr Management SME	9,970	3.8%	10,352	7.7%	11,148
Supervisory	10,068	1.9%	10,263	13.4%	11,640
Middle / Junior Management	10,050	3.6%	10,415	8.1%	11,260
Designer / Developer	1,469	4.4%	1,533	5.7%	1,620
Clerical	5,158	5.3%	5,430	8.2%	5,875
Self Employed	1,377	1.2%	1,394	13.2%	1,578
Advisor or Agent	997	2.8%	1,025	5.8%	1,084
Educator	33	3.7%	34	8.9%	37
Specialist or Consultant	5,554	7.6%	5,978	5.0%	6,279
Editor	165	5.4%	174	5.8%	184
Industrial Researchers	1,700	7.4%	1,826	-1.4%	1,800
Scientist	744	3.1%	766	6.7%	818
Maintenance Engineer	11,255	7.9%	12,147	6.3%	12,916
Civil Engineer	836	8.1%	904	-0.6%	898
Production Engineer	2,146	3.4%	2,218	5.1%	2,330
Power distribution Engineer	5,291	5.8%	5,596	5.6%	5,906
Construction Engineer	1,169	7.3%	1,255	7.3%	1,347
Sales Exec	5,474	4.8%	5,740	4.8%	6,013
Marketing Personnel	5,336	5.1%	5,606	7.5%	6,028
General Semi Skilled Worker	11,083	4.7%	11,610	7.8%	12,514
General Labour	13,342	5.0%	14,007	8.0%	15,123
Other Employees	14,997	0.8%	15,123	0.6%	15,218
Administrative workers	5,874	7.4%	6,310	4.9%	6,621
Total Number of Employees	176,395	5.7%	186,486	5.0%	195,817

At the sector-level we can see that the number of employees per occupational classification varies considerably between each year. For example, the Civil Engineer classification saw growth of 8.1% between 2017/18 and -0.6% between 2018/19.

Due to the varied nature of the LCEGS sector, which draws from many more traditional sectors such as Engineering, Construction and many others, the decrease in employee numbers from year to year can be a result of employees working within the same company, but within a different sector. An example would be a company engineering components within both the Wind sub-sector and Automotive sector, where one year the company services more Wind than Automotive contracts, the employee numbers would count more Wind employees; the following year the company services more Automotive contracts than Wind contracts, resulting in an apparent reduction in the number of employees for the Wind sector, which is true with regards to those working *within the LCEGS Sector* but it does not necessarily follow that they are job losses within companies themselves.

The Total Number of Employees increases year on year, which is more reliable indication of employment growth due to the larger numbers being less impacted by the natural fluctuations mentioned above.

Table 4 shows the number of employees within each standard Occupational Class for the Level 1 sub-sectors.

Table 4: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – Level 1

Skill	Low Carbon					Renewable Energy					Environmental				
	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Technicians	1,363	8.9%	1,485	0.6%	1,493	1,752	8.9%	1,909	0.3%	1,915	1,189	8.7%	1,292	0.5%	1,299
Snr Management SME	2,380	3.8%	2,470	7.9%	2,665	5,748	3.8%	5,968	7.6%	6,418	1,842	4.0%	1,915	7.8%	2,064
Supervisory	2,513	1.7%	2,557	14.1%	2,917	5,622	1.9%	5,731	13.3%	6,493	1,933	2.2%	1,975	12.9%	2,230
Middle / Junior Management	2,497	3.7%	2,590	8.3%	2,805	5,627	3.5%	5,827	8.1%	6,300	1,926	3.8%	1,998	7.8%	2,155
Designer / Developer	371	4.4%	388	5.8%	411	443	4.3%	462	5.7%	488	655	4.4%	683	5.6%	721
Clerical	1,320	5.5%	1,393	8.3%	1,509	2,844	5.2%	2,992	8.1%	3,235	994	5.1%	1,045	8.2%	1,130
Self Employed	493	1.3%	499	13.3%	566	367	1.1%	371	13.3%	421	517	1.2%	523	13.0%	591
Advisor or Agent	496	2.7%	509	6.0%	540	126	2.8%	129	5.6%	137	376	2.9%	387	5.5%	408
Educator	2	3.6%	2	8.7%	2	0	3.9%	0	8.4%	0	31	3.7%	33	8.9%	35
Specialist or Consultant	1,587	9.0%	1,729	5.5%	1,824	2,767	7.1%	2,963	4.9%	3,108	1,200	7.1%	1,286	4.7%	1,347
Editor	36	5.6%	38	6.0%	40	40	5.3%	42	5.7%	44	89	5.3%	93	5.8%	99
Industrial Researchers	960	7.4%	1,031	-1.3%	1,018	198	7.4%	213	-1.7%	209	542	7.3%	582	-1.5%	573
Scientist	493	3.0%	508	6.7%	542	72	3.1%	74	6.5%	79	179	3.1%	184	6.6%	196
Maintenance Engineer	2,760	7.9%	2,977	6.6%	3,172	6,026	8.0%	6,508	6.2%	6,911	2,469	7.8%	2,662	6.4%	2,832
Civil Engineer	194	8.3%	210	-0.6%	209	196	8.1%	212	-0.9%	210	447	8.0%	482	-0.5%	479
Production Engineer	647	3.4%	668	5.2%	703	912	3.3%	942	5.0%	989	587	3.4%	607	4.9%	637
Power distribution Engineer	1,117	5.9%	1,183	5.7%	1,250	2,934	5.8%	3,104	5.4%	3,272	1,240	5.6%	1,309	5.8%	1,385
Construction Engineer	245	7.4%	264	7.5%	284	395	7.4%	424	7.2%	455	529	7.3%	568	7.4%	609
Sales Exec	1,634	4.9%	1,715	4.8%	1,797	2,753	4.8%	2,887	4.6%	3,020	1,087	4.7%	1,138	5.1%	1,196
Marketing Personnel	1,613	5.0%	1,693	7.7%	1,823	2,741	5.1%	2,881	7.5%	3,095	983	5.1%	1,033	7.5%	1,110
General Semi Skilled Worker	2,779	4.8%	2,914	7.8%	3,142	5,862	4.7%	6,140	7.7%	6,615	2,441	4.7%	2,556	7.9%	2,757
General Labour	4,480	5.0%	4,704	8.1%	5,087	7,104	4.9%	7,455	7.8%	8,039	1,758	5.1%	1,848	8.1%	1,997
Other Employees	3,501	0.1%	3,504	0.3%	3,513	8,584	1.6%	8,720	0.1%	8,725	2,913	-0.5%	2,900	2.8%	2,981
Administrative workers	1,596	7.9%	1,722	4.8%	1,805	3,011	7.3%	3,232	5.0%	3,392	1,267	7.0%	1,355	5.0%	1,424
Total Number of Employees	67,773	5.8%	71,684	5.0%	75,287	69,722	5.7%	73,700	5.0%	77,369	38,901	5.7%	41,102	5.0%	43,161

A similar pattern is seen the Level 1 figures, with natural fluctuations in employee numbers. The numbers do give an indication of the relative scale of employment between sub-sectors in the different occupational classes.

The top 11 sub-sectors account for 95% of employment in the LCEGS sector in the MEH region. Tables 5a-5d shows the number of employees within each standard Occupational Class for the top 11 Level 2 sub-sectors of the LCEGS sector.

Table 5a: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – Alternative Fuel Vehicle, Alternative Fuels and Biomass

Skill	Alternative Fuel Vehicle					Alternative Fuels					Biomass				
	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Technicians	73	8.7%	80	0.6%	80	538	8.9%	586	0.6%	589	310	8.8%	337	0.3%	338
Snr Management SME	129	3.6%	133	8.0%	144	458	4.0%	476	7.8%	513	1,273	3.7%	1,320	7.7%	1,422
Supervisory	160	2.1%	163	13.1%	184	554	2.1%	566	13.1%	640	1,242	1.9%	1,265	13.6%	1,437
Middle / Junior Management	161	3.4%	166	8.6%	180	554	3.9%	576	7.9%	621	1,233	3.5%	1,277	8.1%	1,380
Designer / Developer	17	4.3%	18	5.6%	19	98	4.3%	102	5.8%	108	144	4.2%	150	5.8%	159
Clerical	97	5.2%	103	8.1%	111	277	5.2%	291	8.4%	316	625	5.3%	658	8.1%	711
Self Employed	98	1.1%	99	13.3%	112	149	1.5%	151	13.0%	171	63	1.1%	64	13.5%	73
Advisor or Agent	174	2.7%	178	5.7%	188	13	2.7%	13	5.7%	14	20	2.7%	21	5.6%	22
Educator	0	0	0	0	0	0	0	0	0	0	0	3.9%	0	8.4%	0
Specialist or Consultant	37	13.2%	42	7.1%	45	437	7.7%	470	5.0%	494	685	7.0%	732	5.0%	769
Editor	0	0	0	0	0	0	0	0	0	0	19	5.2%	20	5.7%	21
Industrial Researchers	279	7.2%	300	-1.4%	296	206	7.5%	222	-1.2%	219	26	7.3%	28	-1.6%	28
Scientist	28	3.0%	29	6.8%	31	377	3.1%	388	6.7%	415	39	3.2%	41	6.5%	43
Maintenance Engineer	224	7.9%	242	6.5%	258	698	7.9%	753	6.6%	803	1,240	8.0%	1,340	6.3%	1,424
Civil Engineer	35	8.1%	38	-0.5%	38	3	8.0%	3	-0.7%	3	21	8.2%	23	-1.1%	22
Production Engineer	0	0	0	0	0	387	3.3%	400	5.2%	420	194	3.3%	200	5.1%	210
Power distribution Engineer	35	5.6%	37	5.9%	39	129	5.6%	136	5.7%	144	616	5.9%	653	5.3%	687
Construction Engineer	35	7.4%	37	7.3%	40	3	7.4%	3	7.5%	3	18	7.3%	20	7.5%	21
Sales Exec	188	4.9%	197	4.6%	206	572	5.0%	600	4.7%	629	616	4.9%	647	4.4%	675
Marketing Personnel	188	4.9%	197	7.6%	212	567	5.0%	595	7.7%	641	617	5.2%	648	7.6%	697
General Semi Skilled Worker	161	4.8%	169	7.7%	182	741	4.7%	776	7.8%	837	1,244	4.7%	1,303	7.7%	1,404
General Labour	257	5.0%	270	8.0%	292	1,003	4.9%	1,052	8.3%	1,139	1,299	5.0%	1,364	7.9%	1,472
Other Employees	196	-2.3%	191	7.3%	205	683	-1.1%	675	1.4%	685	1,847	2.2%	1,887	-0.5%	1,878
Administrative workers	133	7.1%	142	5.2%	149	371	6.9%	397	5.2%	418	634	7.5%	682	4.6%	714
Total Number of Employees	9,759	5.8%	10,320	5.0%	10,834	25,055	5.7%	26,479	4.9%	27,783	12,985	5.7%	13,722	4.9%	14,392

Table 5b: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – Building Technologies, Energy Management and Geothermal

Skill	Building Technologies					Energy Management					Geothermal				
	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Technicians	590	8.9%	642	0.6%	646	97	8.9%	106	0.4%	106	154	8.8%	168	0.5%	169
Snr Management SME	1,468	3.8%	1,524	8.1%	1,647	181	3.9%	188	7.6%	203	606	3.7%	629	7.9%	678
Supervisory	1,417	2.0%	1,446	13.5%	1,641	188	2.0%	192	13.6%	218	583	2.0%	595	13.3%	674
Middle / Junior Management	1,416	3.8%	1,470	8.1%	1,589	188	3.6%	195	8.3%	211	586	3.6%	607	8.0%	656
Designer / Developer	169	4.4%	177	5.8%	187	50	4.3%	52	5.8%	55	67	4.3%	70	5.7%	74
Clerical	738	5.3%	778	8.2%	842	96	5.1%	101	8.4%	110	297	5.2%	313	8.1%	338
Self Employed	165	1.3%	168	13.6%	190	46	1.1%	47	13.6%	53	34	1.1%	35	13.3%	39
Advisor or Agent	200	2.5%	205	6.0%	217	42	2.9%	43	5.6%	45	33	2.7%	34	5.6%	35
Educator	0	0	0	0	0	1	3.6%	1	8.7%	1	0	0	0	0	0
Specialist or Consultant	846	8.8%	920	5.6%	972	110	7.5%	118	4.9%	124	306	7.1%	328	4.7%	343
Editor	6	5.4%	7	5.9%	7	18	5.4%	19	5.6%	20	16	5.4%	17	5.7%	18
Industrial Researchers	375	7.4%	403	-1.2%	398	38	7.5%	41	-1.8%	40	23	7.4%	25	-1.7%	25
Scientist	51	2.8%	52	6.9%	56	20	2.9%	21	6.6%	22	18	3.1%	18	6.6%	19
Maintenance Engineer	1,448	7.8%	1,561	6.6%	1,664	230	8.0%	248	6.4%	264	614	7.8%	662	6.4%	704
Civil Engineer	90	8.3%	98	-0.9%	97	37	8.1%	40	-1.0%	39	31	8.1%	33	-0.9%	33
Production Engineer	187	3.3%	193	5.2%	203	43	3.2%	44	5.2%	47	103	3.2%	107	5.2%	112
Power distribution Engineer	763	5.9%	808	5.6%	853	110	5.9%	117	5.5%	123	302	5.7%	320	5.7%	338
Construction Engineer	141	7.4%	151	7.6%	162	39	7.4%	42	7.3%	45	25	7.3%	27	7.4%	29
Sales Exec	681	4.8%	714	4.8%	749	115	4.9%	121	4.6%	126	315	4.8%	331	4.8%	346
Marketing Personnel	680	4.9%	713	7.7%	768	106	5.1%	112	7.6%	120	307	5.0%	322	7.6%	346
General Semi Skilled Worker	1,510	4.9%	1,584	7.8%	1,708	216	4.6%	226	7.9%	244	614	4.7%	642	7.8%	693
General Labour	2,785	5.0%	2,925	8.1%	3,162	330	4.9%	346	8.0%	373	909	5.0%	955	8.0%	1,031
Other Employees	2,090	0.8%	2,107	-0.2%	2,103	286	0.1%	287	1.2%	290	877	2.1%	895	-0.8%	888
Administrative workers	827	7.3%	888	5.1%	933	116	7.3%	125	5.1%	131	310	7.2%	333	5.0%	349
Total Number of Employees	26,551	5.8%	28,093	5.1%	29,520	3,727	5.7%	3,941	4.9%	4,135	7,745	5.7%	8,186	5.0%	8,596

Table 5c: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – Photovoltaic, Recovery & Recycling and Waste Management

Skill	Photovoltaic					Recovery & Recycling					Waste Management				
	Growth		Growth		2019/20	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Technicians	506	8.9%	552	0.5%	554	356	8.6%	386	0.7%	389	302	8.7%	328	0.3%	329
Snr Management SME	1,531	3.7%	1,588	7.7%	1,710	406	4.0%	422	7.7%	455	538	3.9%	559	7.8%	603
Supervisory	1,470	1.8%	1,497	13.6%	1,701	421	2.1%	430	12.8%	485	585	2.2%	598	12.9%	675
Middle / Junior Management	1,474	3.5%	1,525	8.1%	1,649	419	3.7%	435	7.8%	469	589	3.7%	610	7.9%	658
Designer / Developer	109	4.4%	114	5.7%	120	303	4.3%	316	5.6%	334	124	4.5%	130	5.3%	137
Clerical	743	5.2%	781	8.2%	846	211	5.1%	222	8.2%	240	311	5.0%	327	8.2%	353
Self Employed	79	1.1%	80	13.6%	91	103	1.3%	105	13.0%	118	156	1.2%	157	12.8%	178
Advisor or Agent	11	2.6%	11	5.7%	11	38	2.6%	39	5.7%	42	213	3.0%	219	5.3%	231
Educator	0	0	0	0	0	1	3.8%	2	8.7%	2	12	3.7%	13	9.0%	14
Specialist or Consultant	697	7.2%	747	4.8%	784	349	6.9%	373	4.8%	390	323	7.4%	347	4.8%	363
Editor	0	0	0	0	0	17	5.2%	17	5.9%	19	33	5.3%	35	5.7%	37
Industrial Researchers	55	7.4%	59	-1.8%	58	94	7.3%	101	-1.4%	100	294	7.3%	316	-1.5%	311
Scientist	2	2.9%	2	6.6%	2	82	3.1%	84	6.6%	90	54	3.0%	56	6.7%	60
Maintenance Engineer	1,501	8.0%	1,621	6.2%	1,722	530	7.7%	571	6.4%	607	723	7.9%	780	6.3%	829
Civil Engineer	41	8.2%	44	-1.1%	43	161	7.9%	173	-0.5%	173	115	8.0%	124	-0.5%	123
Production Engineer	206	3.4%	213	5.1%	224	189	3.3%	195	5.2%	206	130	3.5%	134	4.7%	141
Power distribution Engineer	766	5.8%	810	5.5%	855	288	5.6%	304	5.7%	322	362	5.5%	382	5.7%	403
Construction Engineer	79	7.5%	85	7.3%	91	162	7.2%	173	7.5%	186	145	7.3%	156	7.2%	167
Sales Exec	734	4.7%	769	4.8%	806	354	4.7%	371	5.0%	389	296	4.6%	309	5.1%	325
Marketing Personnel	734	5.1%	771	7.5%	829	283	5.1%	298	7.6%	320	278	5.1%	293	7.3%	314
General Semi Skilled Worker	1,565	4.6%	1,637	8.1%	1,770	699	4.7%	731	7.8%	788	664	4.8%	696	7.8%	750
General Labour	2,019	4.8%	2,115	8.0%	2,284	710	5.1%	747	8.1%	807	410	5.1%	431	7.9%	466
Other Employees	2,166	1.7%	2,203	-0.6%	2,190	575	-2.7%	559	3.5%	579	916	-0.3%	913	3.9%	949
Administrative workers	785	7.3%	843	5.0%	885	291	7.0%	312	5.1%	327	394	6.9%	421	5.0%	442
Total Number of Employees	18,493	5.7%	19,553	5.0%	20,530	9,671	5.6%	10,214	5.0%	10,726	11,771	5.7%	12,439	5.0%	13,059

Table 5d: MEH's LCEGS Skills, measured as Job Descriptions with growth 2017/18 to 2019/20 – Water & Waste Water Treatment

Skill	Water & Waste Water Treatment					Wind				
	Growth		Growth		2019/20	Growth		Growth		2019/20
	2017/18	%	2018/19	%		2017/18	%	2018/19	%	
Technicians	444	8.7%	483	0.6%	485	759	9.0%	827	0.2%	829
Snr Management SME	734	4.0%	764	7.9%	824	2,301	4.0%	2,393	7.3%	2,566
Supervisory	744	2.2%	761	13.0%	859	2,282	2.0%	2,329	12.9%	2,630
Middle / Junior Management	738	3.8%	766	7.8%	826	2,290	3.6%	2,371	8.1%	2,565
Designer / Developer	174	4.4%	182	5.7%	192	112	4.4%	117	5.6%	123
Clerical	373	5.2%	392	8.2%	425	1,153	5.2%	1,213	8.0%	1,310
Self Employed	197	1.2%	199	13.1%	225	176	1.1%	178	13.2%	201
Advisor or Agent	28	2.7%	29	5.4%	30	20	2.9%	21	5.5%	22
Educator	1	3.8%	1	8.7%	1	0	0	0	0	0
Specialist or Consultant	423	7.1%	452	4.6%	473	1,050	7.0%	1,124	4.9%	1,179
Editor	13	5.5%	14	5.8%	15	3	5.3%	3	6.0%	3
Industrial Researchers	34	7.4%	36	-1.5%	36	27	7.3%	29	-1.8%	29
Scientist	14	3.2%	15	6.5%	16	5	3.0%	5	6.5%	6
Maintenance Engineer	997	7.8%	1,075	6.5%	1,145	2,621	8.0%	2,831	6.1%	3,003
Civil Engineer	126	7.9%	136	-0.5%	135	91	8.0%	98	-0.8%	97
Production Engineer	227	3.5%	235	4.8%	246	402	3.3%	415	4.9%	436
Power distribution Engineer	480	5.6%	506	6.0%	537	1,220	5.8%	1,291	5.3%	1,359
Construction Engineer	176	7.2%	189	7.3%	203	258	7.4%	277	7.1%	297
Sales Exec	332	4.7%	347	5.2%	365	1,067	4.9%	1,119	4.6%	1,171
Marketing Personnel	325	5.2%	342	7.5%	367	1,064	5.1%	1,119	7.3%	1,201
General Semi Skilled Worker	875	4.6%	915	8.0%	988	2,389	4.9%	2,505	7.5%	2,692
General Labour	451	5.0%	474	8.2%	513	2,817	5.0%	2,959	7.6%	3,185
Other Employees	1,144	0.5%	1,149	1.1%	1,162	3,624	1.2%	3,666	0.8%	3,695
Administrative workers	453	7.0%	484	5.1%	509	1,245	7.3%	1,335	5.0%	1,403
Total Number of Employees	13,391	5.7%	14,149	5.0%	14,859	29,156	5.7%	30,820	5.0%	32,364

Again, a similar pattern is seen the Level 2 figures as those in Level 1, with natural fluctuations in employee numbers. As for Level 1, the numbers do give an indication of the relative scale of employment between sub-sectors in the different occupational classes.

1.11 MEH's LCEGS Growth Proportion of UK Market

In Section 1.1 annual growth in MEH's LCEGS sales, companies and employment was compared with growth in the UK's LCEGS sector as a whole for 2017/18 to 2019/20. Table 6 shows the MEH annual growth in more detail by breaking it down into sub-sectors for each of the three years. Growth between one year and the next is shown in red.

The MEH region holds 12.1% of the UK's total LCEGS sector in terms of sales. The growth rates for the MEH are generally uniform compared to those for the UK. The UK growth rates are affected by the activity in London, which are more volatile than in other areas of the country, such as the MEH region. As such, the MEH growth rates are more indicative of the growth rates you would expect in regions not affected by activities in London.

While annual growth in the LCEGS sector as a whole has varied between 3.7 and 6.9% for each of the three parameters, Table 6 shows that the sector has grown evenly in terms of sales across the Level 2 sub-sectors, with the exception of Nuclear and Carbon Finance which are currently undergoing more rapid growth than the regional average. The advantage of even growth is less volatility and more stability and certainty in the market. It is illustrative of the whole LCEGS sector growing together due to better coordination across networks and chains of supply than the national average. There is more variation in growth between sub-sectors in terms of the number of employees and companies, as they respond to different pressures within different sub-sectors.

Level 2 sub-sectors which illustrate the consistency within the MEH region compared with the UK average and are a reflection of the opportunities that are being created by drivers of growth including policy, regulation and consumer choices, include:

- Air Pollution, where the MEH growth rates were 5.2% between 2017/18 and 2018/19 and 5.9% between 2018/19 and 2019/20 and the UK growth rates were 1.7% between 2017/18 and 2018/19 and -4.3% between 2018/19 and 2019/20
- Alternative Fuel Vehicle, where the MEH growth rates were 5.2% between 2017/18 and 2018/19 and 5.9% between 2018/19 and 2019/20 and the UK growth rates were 7.4% between 2017/18 and 2018/19 and -1.6% between 2018/19 and 2019/20
- Alternative Fuels, where the MEH growth rates were 5.2% between 2017/18 and 2018/19 and 5.9% between 2018/19 and 2019/20 and the UK growth rates were 10.2% between 2017/18 and 2018/19 and 3.3% between 2018/19 and 2019/20
- Building Technologies, where the MEH growth rates were 5.2% between 2017/18 and 2018/19 and 5.9% between 2018/19 and 2019/20 and the UK growth rates were 9.5% between 2017/18 and 2018/19 and 3.9% between 2018/19 and 2019/20
- Energy Management, where the MEH growth rates were 5.2% between 2017/18 and 2018/19 and 5.9% between 2018/19 and 2019/20 and the UK growth rates were 6.7% between 2017/18 and 2018/19 and -1.0% between 2018/19 and 2019/20
- Nuclear, where the MEH growth rates were 12.9% between 2017/18 and 2018/19 and 14.3% between 2018/19 and 2019/20 and the UK growth rates were 5.5% between 2017/18 and 2018/19 and -2.5% between 2018/19 and 2019/20

Table 6: MEH's LCEGS Sales (£m), Company and Employment Growth 2017/18 to 2019/20

		Sales £m					# Companies					# Employees				
Level 1	Level 2	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
Environmental	Air Pollution	128.6	5.2%	135.2	5.9%	143.2	51	3.9%	53	6.7%	56	951	5.7%	1,006	5.1%	1,057
Environmental	Contaminated Land	128.6	5.2%	135.3	5.9%	143.3	52	3.7%	54	7.0%	58	954	5.8%	1,009	5.1%	1,061
Environmental	Environmental Consultancy	161.6	5.2%	170.0	5.9%	179.9	64	3.7%	66	6.7%	71	1,198	5.7%	1,266	5.0%	1,329
Environmental	Environmental Monitoring	34.2	5.1%	35.9	5.8%	38.0	14	3.6%	14	6.8%	15	253	5.5%	267	5.0%	280
Environmental	Marine Pollution Control	24.9	5.2%	26.2	5.9%	27.7	10	3.8%	10	6.9%	11	185	5.8%	196	5.0%	205
Environmental	Noise & Vibration Control	71.4	5.2%	75.1	5.9%	79.5	28	3.7%	29	6.9%	31	527	5.7%	557	5.0%	585
Environmental	Recovery and Recycling	1,305.3	5.2%	1,372.6	5.8%	1,452.5	527	3.6%	546	6.9%	584	9,671	5.6%	10,214	5.0%	10,726
Environmental	Waste Management	1,591.1	5.1%	1,672.7	5.8%	1,769.7	617	3.6%	639	6.6%	682	11,771	5.7%	12,439	5.0%	13,059
Environmental	Water & Waste Water Treatment	1,810.1	5.2%	1,903.7	5.8%	2,014.9	702	3.6%	727	6.5%	775	13,391	5.7%	14,149	5.0%	14,859
Low Carbon	Additional Energy Sources	210.8	5.2%	221.8	5.9%	234.7	84	3.7%	87	6.7%	93	1,559	5.7%	1,648	5.1%	1,732
Low Carbon	Alternative Fuel Vehicle	1,322.0	5.2%	1,390.6	5.9%	1,472.3	528	3.7%	548	6.9%	586	9,759	5.8%	10,320	5.0%	10,834
Low Carbon	Alternative Fuels	3,377.5	5.2%	3,552.2	5.9%	3,761.4	1,429	3.4%	1,477	7.3%	1,584	25,055	5.7%	26,479	4.9%	27,783
Low Carbon	Building Technologies	3,583.6	5.2%	3,771.6	5.9%	3,995.6	1,407	3.7%	1,459	6.7%	1,558	26,551	5.8%	28,093	5.1%	29,520
Low Carbon	Carbon Capture & Storage	81.1	5.2%	85.3	5.9%	90.3	33	3.8%	34	6.7%	36	600	5.7%	634	5.1%	667
Low Carbon	Carbon Finance	113.7	7.9%	122.8	9.1%	133.9	57	6.5%	61	6.1%	65	389	6.4%	414	6.3%	440
Low Carbon	Energy Management	502.5	5.2%	528.6	5.9%	559.7	201	3.5%	208	6.9%	222	3,727	5.7%	3,941	4.9%	4,135
Low Carbon	Nuclear Power	4.2	12.9%	4.8	14.3%	5.4	19	11.9%	22	3.9%	23	132	17.0%	154	13.9%	176
Renewable Energy	Biomass	1,746.4	5.1%	1,836.2	5.8%	1,943.2	698	3.6%	724	6.9%	774	12,985	5.7%	13,722	4.9%	14,392
Renewable Energy	Geothermal	1,045.0	5.2%	1,098.9	5.8%	1,163.0	415	3.6%	430	6.8%	460	7,745	5.7%	8,186	5.0%	8,596
Renewable Energy	Hydro	67.0	5.0%	70.4	5.7%	74.4	27	3.5%	28	6.1%	29	497	5.1%	522	4.8%	547
Renewable Energy	Photovoltaic	2,491.0	5.2%	2,619.9	5.9%	2,773.4	971	3.7%	1,007	6.7%	1,075	18,493	5.7%	19,553	5.0%	20,530
Renewable Energy	Renewable Consultancy	110.4	5.2%	116.1	5.9%	122.8	44	3.7%	45	7.0%	49	819	5.8%	866	4.9%	909
Renewable Energy	Wave & Tidal	3.7	5.1%	3.9	5.8%	4.1	1	4.3%	2	6.3%	2	28	5.1%	29	5.2%	30
Renewable Energy	Wind	3,930.4	5.1%	4,132.7	5.8%	4,373.1	1,570	3.8%	1,629	7.1%	1,745	29,156	5.7%	30,820	5.0%	32,364
Total		23,845.2	5.2%	25,082.2	5.9%	26,556.2	9,551	3.7%	9,900	6.9%	10,581	176,395	5.7%	186,486	5.0%	195,817

Some sub-sectors have shown stronger growth across the 3-year study period 2017/18 to 2019/20 than the UK average and should be considered strengths of the region and include:

- Nuclear with 29.0% (UK 2.9%)
- Alternative Fuel Vehicle with 11.4% (UK 5.7%)
- Energy Management with 11.4% (UK 5.7%)
- Air Pollution with 11.4% (UK 5.8%)
- Contaminated Land Reclamation and Remediation with 11.4% (UK 1.0%)
- Hydro with 11.0% (UK 1.8%)

Some sub-sectors have shown weaker growth across the 3-year study period 2017/18 to 2019/20 than the UK average and include:

- Environmental Consultancy with 11.3% (UK 16.8%)
- Noise & Vibration Control with 11.4% (UK 23.3%)
- Additional Energy Sources with 11.3% (UK 15.9%)
- Carbon Capture & Storage with 11.3% (UK 19.0%)
- Biomass with 11.3% (UK 28.2%)
- Geothermal with 11.3% (UK 18.8%)
- Photovoltaic with 11.3% (UK 24.3%)
- Wave & Tidal with 11.2% (UK 24.9%)
- Wind with 11.3% (UK 42.2%)

By overlaying the sales for each sub-sector as a proportion of the UK market, the impact of stronger or weaker sales growth can be examined more closely. Table 7 shows how the MEH Region compares with the UK as a whole for the 24 Level 2 sub-sectors. The MEH as a % of Sales has been converted to a Proportionality Factor, where 1.0 equals the sector value (12.1%), below 1.0 represents a smaller market than the sector total proportion and above 1.0 represents a market which is larger than the sector total proportion. Likewise the MEH/UK Growth Factor indicates where growth is stronger than the UK (above 1.0) or weaker than the UK (below 1.0)

Table 7: UK & MEH's LCEGS Sales (£m) and 3-Year Growth Comparison

Level 1	Level 2	UK		MEH				
		Sales £m 2019/20	3-Year Growth %	Sales £m 2019/20	3-Year Growth %	MEH as % of UK	MEH/UK Sales Prop.	MEH/UK Growth Factor
Environmental	Air Pollution	1,283.9	5.8%	143.2	11.4%	11.2%	0.9	2.0
Environmental	Contaminated Land	1,269.2	1.0%	143.3	11.4%	11.3%	0.9	11.8
Environmental	Environmental Consultancy	1,268.4	16.8%	179.9	11.3%	14.2%	1.2	0.7
Environmental	Environmental Monitoring	247.6	12.2%	38.0	11.3%	15.4%	1.3	0.9
Environmental	Marine Pollution Control	206.3	12.7%	27.7	11.4%	13.4%	1.1	0.9
Environmental	Noise & Vibration Control	394.7	23.3%	79.5	11.4%	20.1%	1.7	0.5
Environmental	Recovery and Recycling	11,071.7	13.7%	1,452.5	11.3%	13.1%	1.1	0.8
Environmental	Waste Management	7,384.8	12.6%	1,769.7	11.2%	24.0%	2.0	0.9
Environmental	Water & Waste Water Treatment	10,943.9	12.7%	2,014.9	11.3%	18.4%	1.5	0.9
Low Carbon	Additional Energy Sources	2,129.7	15.9%	234.7	11.3%	11.0%	0.9	0.7
Low Carbon	Alternative Fuel Vehicle	19,578.8	5.7%	1,472.3	11.4%	7.5%	0.6	2.0
Low Carbon	Alternative Fuels	32,416.4	13.8%	3,761.4	11.4%	11.6%	1.0	0.8
Low Carbon	Building Technologies	24,963.7	13.7%	3,995.6	11.5%	16.0%	1.3	0.8
Low Carbon	Carbon Capture & Storage	816.0	19.0%	90.3	11.3%	11.1%	0.9	0.6
Low Carbon	Carbon Finance	16,336.5	27.6%	133.9	17.7%	0.8%	0.1	0.6
Low Carbon	Energy Management	3,950.9	5.7%	559.7	11.4%	14.2%	1.2	2.0
Low Carbon	Nuclear Power	4,946.3	2.9%	5.4	29.0%	0.1%	0.0	9.9
Renewable Energy	Biomass	11,234.4	28.2%	1,943.2	11.3%	17.3%	1.4	0.4
Renewable Energy	Geothermal	19,687.0	18.8%	1,163.0	11.3%	5.9%	0.5	0.6
Renewable Energy	Hydro	703.5	1.8%	74.4	11.0%	10.6%	0.9	6.0
Renewable Energy	Photovoltaic	11,132.4	24.3%	2,773.4	11.3%	24.9%	2.1	0.5
Renewable Energy	Renewable Consultancy	722.1	10.8%	122.8	11.3%	17.0%	1.4	1.1
Renewable Energy	Wave & Tidal	171.5	24.9%	4.1	11.2%	2.4%	0.2	0.5
Renewable Energy	Wind	36,664.3	42.2%	4,373.1	11.3%	11.9%	1.0	0.3
Total		219,523.9	18.9%	26,556.2	11.4%	12.1%		

Figure 1 shows how the MEH Region compares with the UK for the 24 Level 2 sub-sectors, with regards to size of market and growth across the three-year study period 2017/18 to 2019/20.

The x-axis represents the MEH/UK sales proportionality factor, which was calculated for each sub-sector by dividing the MEH sales a percentage of the UK, by 12.1 %. This proportionality factor demonstrates where the MEH holds a larger or smaller share of the UK market than would be expected, where:

- 1 = 1.1% of the UK market
- >1 = larger than 1.1% share
- <1 = smaller than 1.1% share

The y-axis represents the growth rate of the MEH's Level 2 sub-sectors compared with the UK. This was calculated by dividing the 3-year growth rate of the MEH by the average UK growth rate. This growth rate factor demonstrates which sub-sectors have a stronger or slower growth rate than the UK, where:

- 1 = the UK growth rate
- >1 = stronger than the UK average growth
- <1 = weaker than UK growth

The graph is split into four quadrants along 1 on each axis, with sub-sectors in each demonstrating:

- Top right = larger market share than expected and stronger growth than the UK average
- Bottom Right = larger market share than expected, but weaker growth than the UK average
- Top left = smaller market share than expected, but stronger growth than the UK average
- Bottom left = smaller market share than expected and weaker growth than the UK average

The bubbles represent the 24 Level 2 sub-sectors and are sized by the 2019/20 sales £m, illustrating the relative sizes of each sub-sector.

Figure 34 clearly illustrates the strong growth of the three relatively small sub-sectors, Contaminated Land and Reclamation, Nuclear Power and Hydroelectric. The growth rate for nuclear is exceptionally high at 29%, compared with the UK average of 2.9%, this is due to recent unusual activity within the sub-sector and is not expected to be continue through future years. Contaminated Land and Reclamation and Hydroelectric should be considered strengths, because they are close to the expected size of market (11.3% for Contaminated Land and 10.6% for Hydro) but are growing significantly stronger than the UK average.

Figure 34: MEH/UK Sales proportionality factor vs. MEH/UK Growth factor of Level 2 Sub-sectors – Bubbles Sized by Sales £m

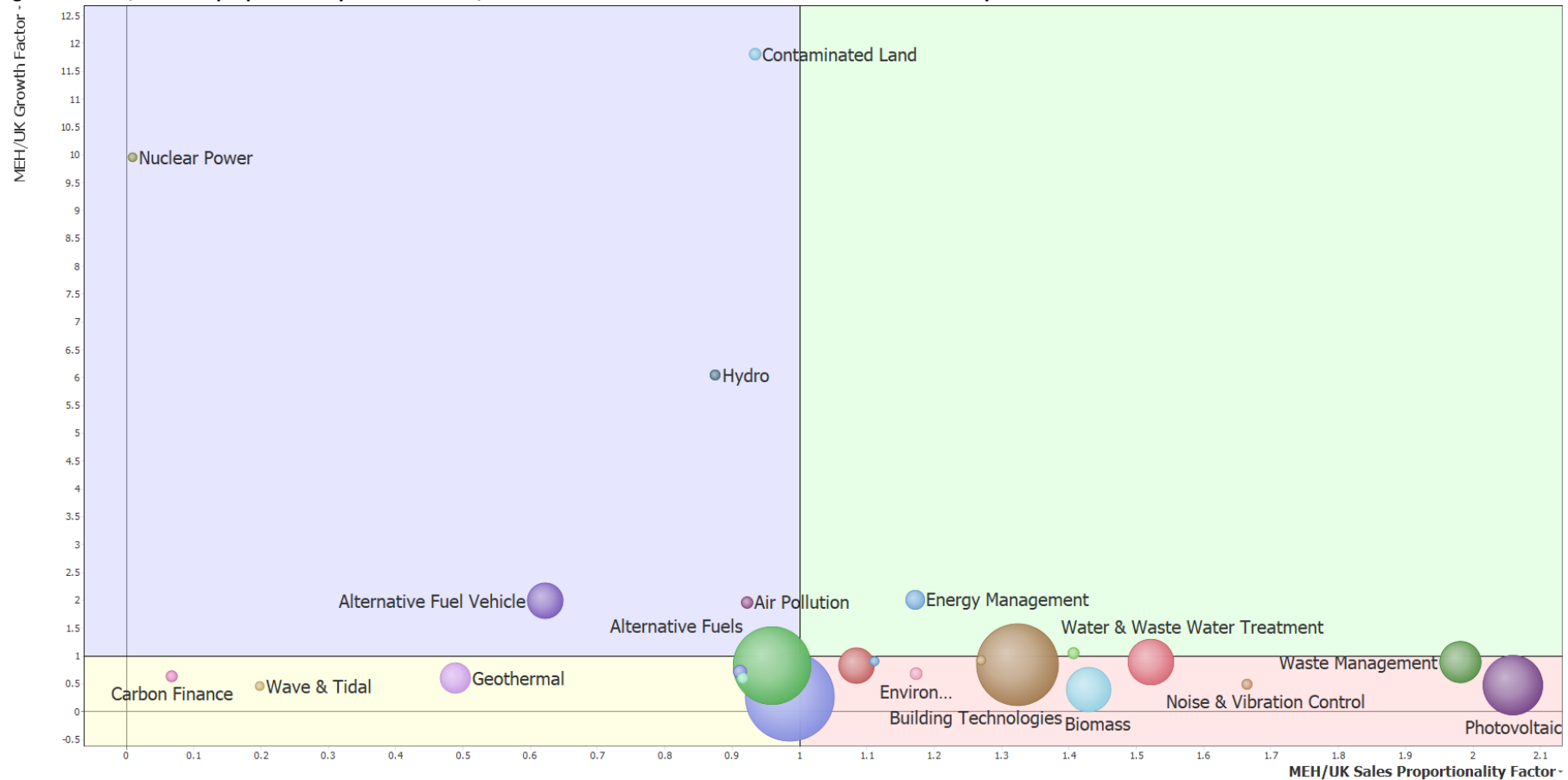
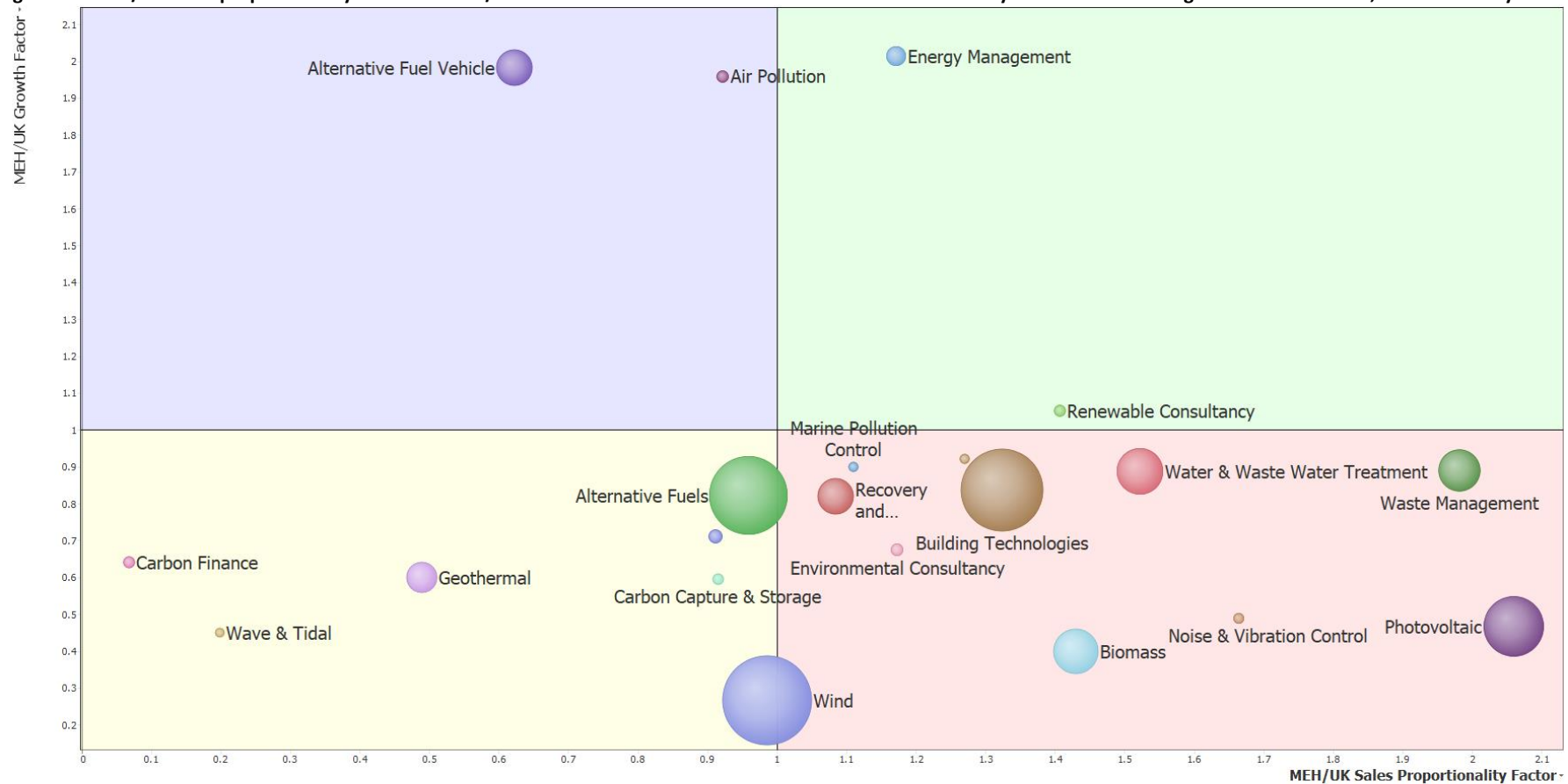


Figure 35 provides the same information as figure 1, but with Contaminated Land, Nuclear and Hydro excluded. By excluding these outliers with very strong growth, we can examine the other sub-sectors. Energy Management and Renewable Consultancy have the ideal characteristics of above UK average growth and above MEH average size. Those in the lower right quadrant (red) hold a larger UK share than the average LCEGS UK market share. The large size of sub-sectors such as Photovoltaic, Building Technologies, Water & Waste Water Treatment, Waste Management and Biomass set these sub-sector apart as being strengths. Those in the lower left (yellow) quadrant such as Geothermal, Wave & tidal and Carbon Finance can be considered relative weaknesses.

Figure 35: MEH/UK Sales proportionality factor vs. MEH/UK Growth factor of Level 2 Sub-sectors – Bubbles Sized by Sales £m – Excluding Contaminated Land, Nuclear and Hydro



1.12 MEH's LCEGS Sector Scalability

In this section we explain the concept of scalability, what influences it, how it can be combined with GVA to explore opportunities and finally why it is different to using only growth.

Scalability refers to the combination of:

- Existence of appropriate available market
- The scalability of technology within a company, area or market
- Affordability of technology
- Availability of appropriate skill sets in the locality
- Historic growth
- Accessibility of networks and chains of supply

All of these factors are taken into consideration when grading scalability.

The scalability of the sector has been calculated by attributing a scalability factor of 'Low', 'Medium' or 'High' per product or service at the Local Authority level, which has been given the corresponding value of 1 = Low; 2 = Medium and 3 = High. We have then taken the average of those values for the products and services grouped together for the Levels to produce an index of scalability.

For example, there are 30 products and services within the Level 3 sub-sector of Windows, within the Building technologies (Low Carbon) sub-sector. For each Local Authority (using Amber Valley as an example), each product and service was allocated a scalability factor:

11 products and services listed as 'High' with a score of 3

15 products and services listed as 'Medium' with a score of 2

4 products and services listed as 'Low' with a score of 1

Calculation:

$$\frac{(11 \times 3) + (15 \times 2) + (4 \times 1)}{30} = 2.23$$

The scalability index has been calculated for the 2769 products and services at Level 5 of the dataset, for each Local Authority, with the average being used to plot the potential for scalability against the GVA of the sector at Level 2.

Figure 36 shows the GVA plotted against the scalability index of the 24 Level 2 sub-sectors for the MEH, with each bubble sized by the GVA of that sub-sector. The most desirable position would be the top right hand corner of the graph, with high GVA and high Scalability. We can see that the Alternative Fuels sub-sector has a good combination of size and scalability, while Renewable Energy General Consultancy may be small in terms of market, but is highly scalable. Biomass is a good example of a sub-sector which has good GVA but low scalability. Scalability graphs for each Local Authority can be found in Appendix 4.

Figure 36: MEH Scalability vs. GVA of Level 2 Sub-sectors – Bubbles Sized by GVA

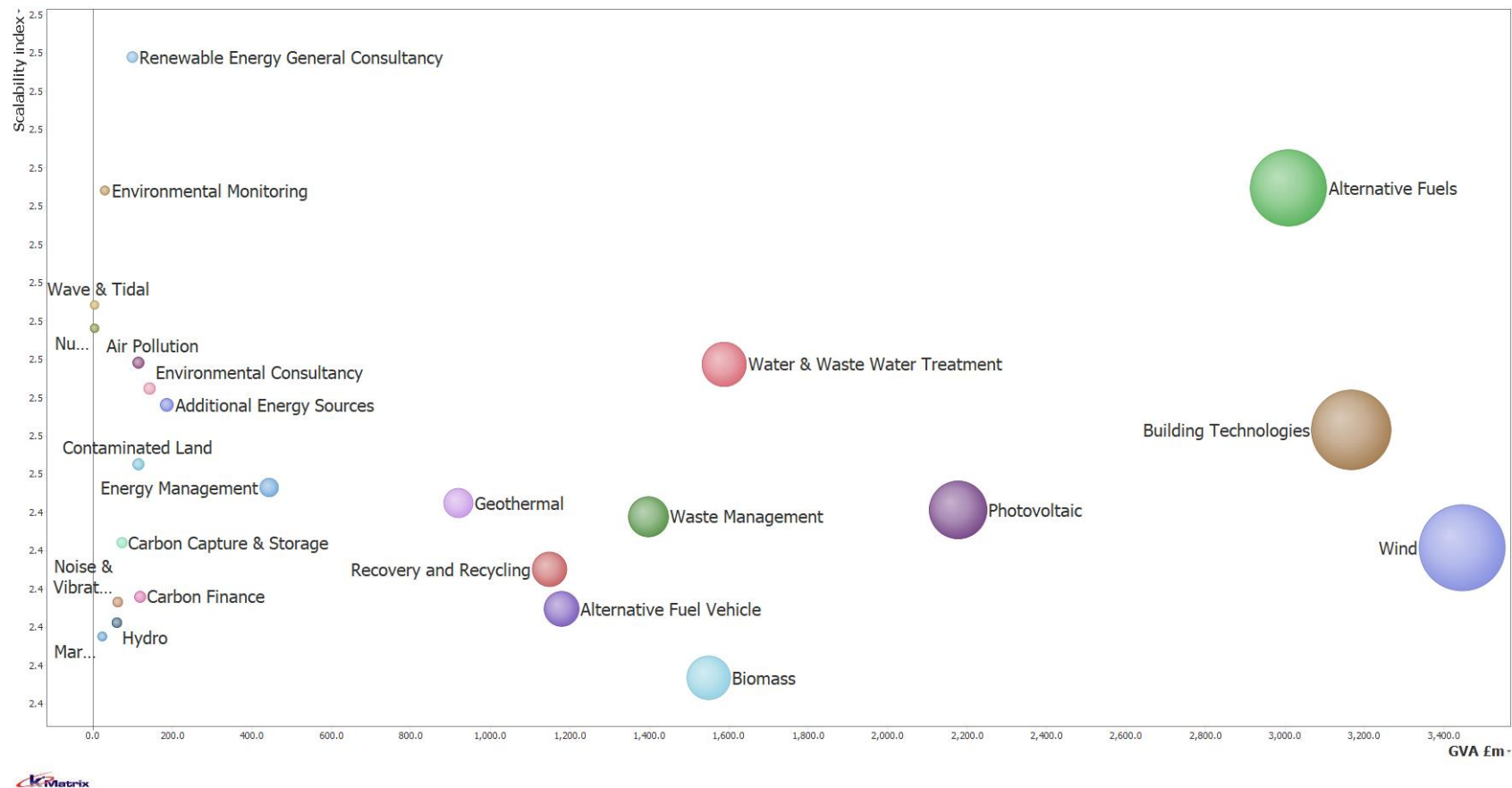
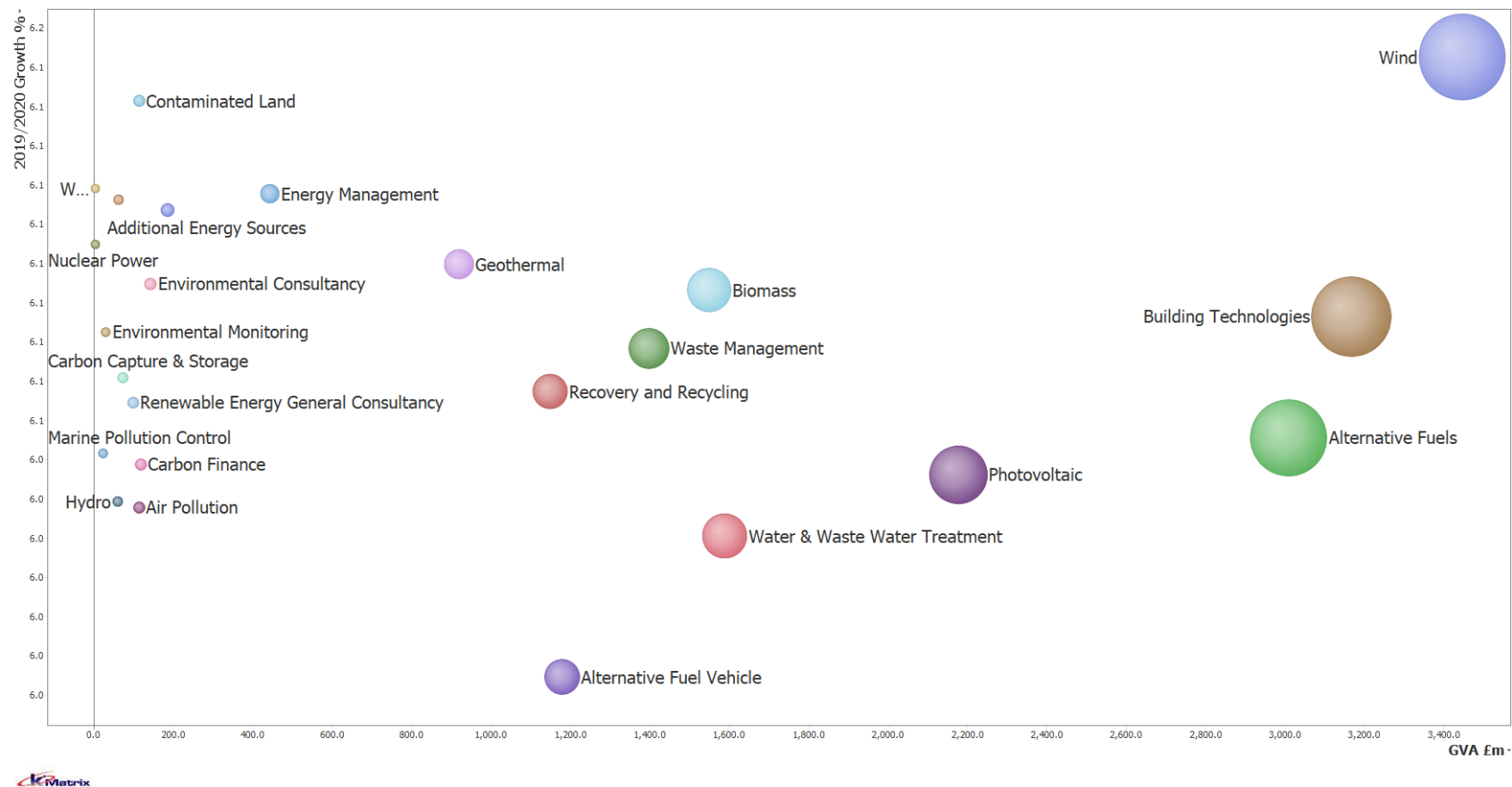


Figure 37 shows the same principle as Figure 36, but with GVA plotted against the growth rates of the Level 2 sub-sectors for 2019/20. This figure illustrates a different pattern of opportunity to the use of the scalability index. When only viewing growth, we can see that the Wind sub-sector occupies the most favourable position of large size and high growth. But in terms of scalability, other factors which can form barriers to scalability, such as restrictions in the supply chain or network of supply or the availability of skills etc. In terms of Wind, technology is advancing which impacts on scalability. For this reason, scalability is a more useful measure than previous growth when looking at opportunities.

Figure 37: MEH 2019/20 Growth Rates vs. GVA of Level 2 Sub-sectors – Bubbles Sized by GVA



1.13 MEH's LCEGS Demand Analysis

This section provides data and analysis regarding the demand analysis which feeds into the Growth 2030/2050 sister report, produced as part of this project. There are three sub-sections:

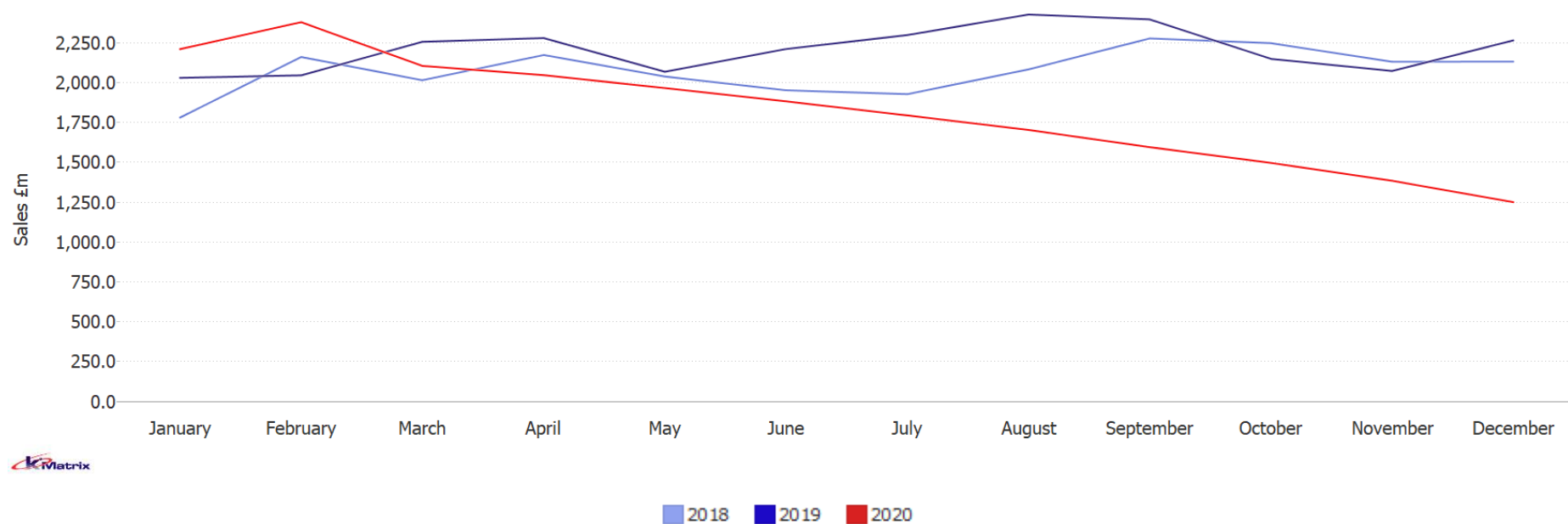
- 1.12.1 Current employment and growth required for 2030 and 2050 net zero targets
- 1.12.2 Current training provision and potential for upskilling of the current workforce within each Level 2 sub-sector
- 1.12.3 Potential of Level 2 sub-sectors to impact on CO2 reduction

1.13.1 Current employment, skills gaps and forecasts for 2030 and 2050 net zero targets

In this section we explore the current levels of employment, per Standard Occupational Classification, identifying skills gaps that are present in the sector and sub-sectors and then estimate the skills requirements needed to achieve net zero targets for 2030 and 2050.

It is difficult to untangle the impact of Covid and the impact of Brexit on the LCEGS sector and for the purposes of this study, we have not attempted to do so. A sister document produced during this study, which maps the monthly LCEGS sector for the MEH region and the nine LEPs, to Level 2 sub-sector detail provides the evidence of the significant impact on the sector since March 2020. The impact during 2020 is illustrated in figure 38, which shows the LCEGS sales, by month for 2018, 2019 and 2020 for the MEH region. Although there has been support for business during the pandemic, many people and businesses have postponed work. There is a large section of the LCEGS sector that will always function, for example waste will be collected, water purified, electricity produced etc. Unfortunately, much of the activity in the sector can and has been postponed until there is more certainty in the market. It is anticipated that the sector will bounce back as restrictions are lifted, particularly with not just the political will, but more so the social emphasis on net zero.

Figure 38: MEH LCEGS Sales, by month 2018, 2019 and 2020

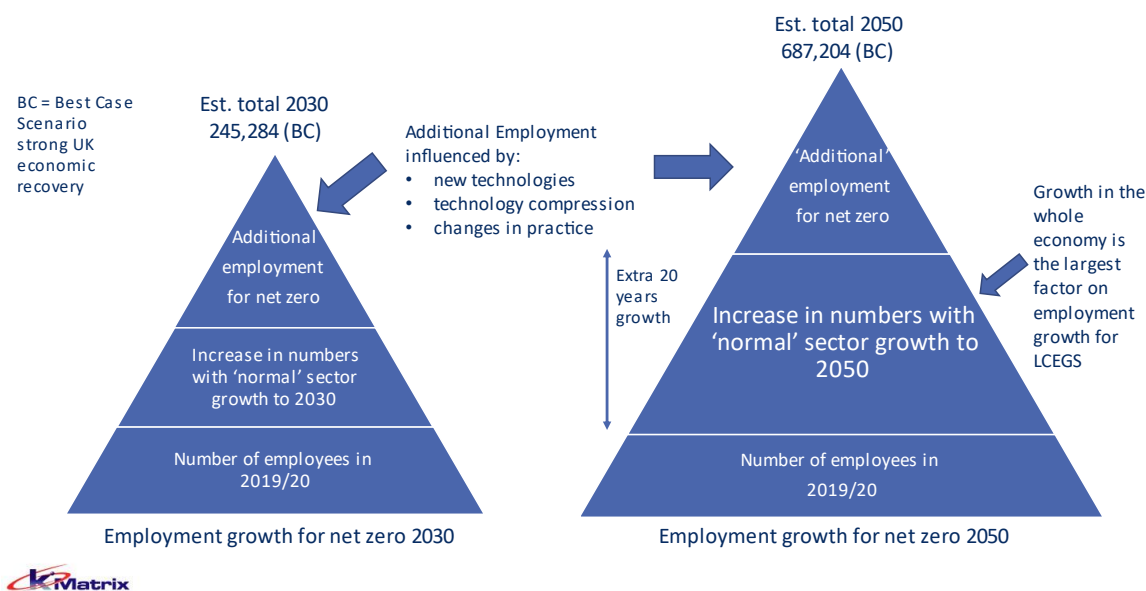


Due to the uncertainty surrounding the current and potential future economic performance of the UK (and global) economy, the forecasting estimates have been produced on a best case vs. worst case scenario basis:

Timeline for Net Zero **Implications of Covid-19 and Brexit**

Net Zero 2030	Best-Case Scenario
	Worst-Case Scenario
Net Zero 2050	Best-Case Scenario
	Worst-Case Scenario

Worst-case scenario refers to a situation with the economy being slow to recover, with slow growth and therefore slow recovery of the LCEGS sector. Best-case scenario refers to a situation where the economy ‘bounces’ back, with strong growth and rapid recovery of the LCEGS sector. In theory, the need to decarbonize will increase with the expansion of the whole economy, therefore the number of employees required to reach net zero will be larger in a best-case scenario than in a worst-case scenario.



The growth forecasts for both 2030 and 2050 begin with the same baseline employment figures for 2019/20, illustrated by the wide base of the triangles in the diagram.

On top of that, the normal growth in the sector that will increase between 2020 and 2030 or 2050 sits on top of that base and has the greatest effect on the growth of the employment numbers. The effect of normal sector growth is more significant for the 2050 target than the 2030 target due to an additional 20 years of normal growth. The extent of growth is determined by whether the UK economy as a whole bounces back from 2020 or takes more time.

On top of that growth is the additional employment required to achieve net zero. In this diagram, the additional employment section is sized the same for both targets. This is to emphasise that to reach net

zero by 2030 would require **relatively** more people with less technology, whereas by 2050, streamlined processes, new technologies, technology compression and changes in practice are likely to lead to a situation requiring **relatively** fewer people, but improved technology.

In essence, most of the employment growth is likely to be normal sector growth, resulting in a higher number of employees in 2050 than 2030, regardless of net zero targets. The LCEGS sector will not stand still during decarbonisation, new technologies and processes will be developed, and the wider economy will still grow. Decarbonisation will not be linear, the quicker it is achieved, the more people are likely to be needed, however, the longer it takes, the more opportunity for technology to impact. In reality, the additional employment component of growth is more nuanced and varies between sub-sectors and geographical area.

Table 8 shows the current 2019/20 employment figures and the estimated employment required to achieve net zero by 2030 and 2050, best- and worst-case scenarios for the LCEGS sector for the MEH.

Shortage of employees refers to the employees that are 'imported' from outside the area, representing a skills gap and the estimated employment requirement and growth assumes those skills gaps are filled.

Employment Total in this analysis is lower than elsewhere in the study. The total employment count in other areas of the study are triangulated from the output and are the number of people required to produce the output recorded, bearing in mind the skills, technology and nature of the sector and sub-sectors in each location. When this data is then overlaid with the data on the SOC classification, there are some jobs that do not 'fit'. Not all jobs can be split into the SOC classification system, because there are new sectors whose job descriptions are not an exact match. It is not appropriate to allocate them as "Other Employees" because they are often combinations of the SOC classifications, also in start-ups and micro companies the same person can be performing several roles with different SOC's for a few days at a time. In a sector comprised of predominately micro and SMEs, this lack of transparency has a higher impact than other sectors comprised of fewer, larger companies.

The employment count refers to 'heads equivalent', so although for example, there are 37 Educators listed, with a shortage of 12, making a total of 49 in the region, this will equate to over 400 people providing 'pockets' of time, to equate to 49 full time jobs.

A limitation of the SOC system is in terms of measuring the number of people involved in installation, distribution, multi-engineering, monitoring or other job descriptions, which could be informative and perhaps future projects could look at breaking the total employment numbers into classifications of job descriptions using the industries own language and tailored to each sub-sector.

The purpose of the data is to indicate skills gaps of those jobs we *can* measure within this project, in order to inform training needs etc. As such, we have based the forecasts on those job descriptions we can measure and forecast on those. In order to reach net zero, the estimation of employment requirement not only takes into account the number of people required to achieve it, within the network and chain of supply, but also forecasts change of practice, e.g. improved manufacturing processes.

In summary, the estimation of employment requirements represents the number of employees likely to be employed in 2030 or 2050, having achieved net zero and can be considered the target numbers of employees per SOC. In terms of changes in number of employees, there are three factors in play:

- The usual increase in employment numbers through normal sector growth
- The additional increase in employment numbers needed to achieve net zero
- These two growths are moderated by the introduction of new technologies, technology compression and changes in practice over time

Table 8: MEH LCEGS Current Employment and Net Zero 2030 and 2050 Estimated Employment Requirements – Sector Data

SOC	Current Employment				Net Zero by 2030				Net Zero by 2050			
					Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
					Estimated #	Growth in	Estimated #	Growth in	Estimated #	Growth in	Estimated #	Growth in
	# Employees	Shortage of Employees	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Needed to Reach Net Zero by 2030	Employees Required (assumes no skills gap)	Needed to Reach Net Zero by 2030	Employees Required (assumes no skills gap)	Needed to Reach Net Zero by 2050	Employees Required (assumes no skills gap)	Needed to Reach Net Zero by 2050	Employees Required (assumes no skills gap)
Technicians	4,707	1,045	22.2%	5,753	6,149	6.9%	8,070	40.3%	9,526	65.6%	22,613	293.1%
Snr Management SME	11,148	1,124	10.1%	12,272	14,583	18.8%	19,115	55.8%	22,548	83.7%	53,480	335.8%
Supervisory	11,640	1,199	10.3%	12,839	15,190	18.3%	19,999	55.8%	23,544	83.4%	56,022	336.3%
Middle / Junior Management	11,260	1,157	10.3%	12,416	14,713	18.5%	19,309	55.5%	22,706	82.9%	54,155	336.2%
Designer / Developer	1,620	426	26.3%	2,046	2,116	3.4%	2,779	35.8%	3,268	59.7%	7,787	280.6%
Clerical	5,875	12	0.2%	5,887	7,696	30.7%	10,083	71.3%	11,882	101.8%	28,180	378.7%
Self Employed	1,578	204	12.9%	1,782	2,062	15.8%	2,707	51.9%	3,182	78.6%	7,582	325.5%
Advisor or Agent	1,084	180	16.6%	1,264	1,420	12.4%	1,862	47.4%	2,188	73.2%	5,210	312.4%
Educator	37	12	31.2%	49	49	0.1%	64	31.3%	75	54.1%	180	266.9%
Specialist or Consultant	6,279	207	3.3%	6,485	8,223	26.8%	10,760	65.9%	12,693	95.7%	30,162	365.1%
Editor	184	7	3.8%	191	240	26.0%	315	65.4%	371	94.8%	881	362.2%
Industrial Researchers	1,800	140	7.8%	1,940	2,348	21.0%	3,089	59.3%	3,644	87.8%	8,658	346.3%
Scientist	818	274	33.5%	1,091	1,067	-2.3%	1,403	28.5%	1,649	51.1%	3,927	259.8%
Maintenance Engineer	12,916	815	6.3%	13,731	16,877	22.9%	22,182	61.6%	26,150	90.4%	62,049	351.9%
Civil Engineer	898	240	26.8%	1,138	1,173	3.1%	1,539	35.2%	1,817	59.6%	4,317	279.3%
Production Engineer	2,330	831	35.7%	3,161	3,041	-3.8%	4,006	26.7%	4,703	48.8%	11,210	254.6%
Power distribution Engineer	5,906	1,758	29.8%	7,664	7,728	0.8%	10,129	32.2%	11,955	56.0%	28,393	270.5%
Construction Engineer	1,347	229	17.0%	1,577	1,764	11.9%	2,313	46.7%	2,723	72.7%	6,481	311.0%
Sales Exec	6,013	687	11.4%	6,700	7,865	17.4%	10,310	53.9%	12,154	81.4%	28,920	331.6%
Marketing Personnel	6,028	673	11.2%	6,702	7,882	17.6%	10,362	54.6%	12,165	81.5%	28,997	332.7%
General Semi Skilled Worker	12,514	262	2.1%	12,776	16,346	27.9%	21,504	68.3%	25,301	98.0%	60,171	371.0%
General Labour	15,123	0	0.0%	15,123	19,790	30.9%	25,965	71.7%	30,545	102.0%	72,748	381.0%
Other Employees	15,218	770	5.1%	15,988	19,889	24.4%	26,063	63.0%	30,768	92.4%	73,234	358.1%
Administrative workers	6,621	142	2.1%	6,763	8,657	28.0%	11,353	67.9%	13,347	97.4%	31,849	370.9%
Total	142,943	12,394	8.7%	155,338	186,868	20.3%	245,284	57.9%	288,903	86.0%	687,204	342.4%

Table 8 shows that the skills gap throughout the sector varies considerably between SOC's within the sector, with significant gap's within large occupational groupings for Production Engineers 35.5%, Power Distribution Engineer 29.8% and Technicians 22.2%. Conversely, there are low skills gap's within large occupational grouping such as General Semi-skilled Worker 2.1%, Maintenance Engineer 6.3%, Specialist or Consultant 3.3% and Administrative Workers 2.1%.

Key points at a sector-level:

- Estimated growth in employees to reach net zero under worst-case scenario economic growth conditions by 2030 is 20.3%
- Estimated growth in employees to reach net zero under best-case scenario economic growth conditions by 2030 is 57.9%
- Estimated growth in employees to reach net zero under worst-case scenario economic growth conditions by 2050 is 86.0%
- Estimated growth in employees to reach net zero under best-case scenario economic growth conditions by 2050 is 342.4%

Tables 9, 10 and 11 provide the estimated employment growth for the three Level 1 sub-sectors.

The Level 1 sub-sectors have different shortages of employees, representing skills gaps:

Low Carbon – 10.5%

Renewable Energy – 7.0%

Environmental – 10.3%

Skill gaps between SOC's also varies between Level 1 sub-sectors:

Production Engineers: Low Carbon 47.3%; Renewable Energy 27.9% and Environmental 34.9%

Power Distribution Engineers: Low Carbon 33.7%; Renewable Energy 27.1% and Environmental 32.6%

Technicians: Low Carbon 27.9%; Renewable Energy 17.3% and Environmental 22.9%

Shortages also vary between Level 2 sub-sectors, for example the shortage in Production Engineers for Geothermal is 68.8%, but only 13.4% in Photovoltaic.

Level 2 tables are located in Appendix 5.

Growth requirements are similar at the sub-sector level of analysis, but demonstrates more variation in SOC's between sub-sectors, for example to reach net zero by 2030, best case scenario would require growth in:

Production Engineers of: Low Carbon 17.0%; Renewable Energy 34.5% and Environmental 27.0%

Power Distribution Engineers of: Low Carbon 28.1%; Renewable Energy 35.1% and Environmental 29.3%

Technicians of: Low Carbon 34.2%; Renewable Energy 45.9% and Environmental 39.6%

Table 9: MEH LCEGS Current Employment and Net Zero 2030 and 2050 Estimated Employment Requirements – Low Carbon

SOC	Low Carbon				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees		# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
		2019/20	Shortage as a % of Total Employees									
Technicians	1,493	417	27.9%	1,911	1,944	1.8%	2,563	34.2%	3,027	58.5%	7,165	275.0%
Snr Management SME	2,665	318	11.9%	2,983	3,475	16.5%	4,571	53.2%	5,401	81.0%	12,811	329.4%
Supervisory	2,917	370	12.7%	3,287	3,816	16.1%	5,010	52.4%	5,902	79.6%	13,994	325.7%
Middle / Junior Management	2,805	356	12.7%	3,161	3,672	16.2%	4,810	52.2%	5,655	78.9%	13,550	328.7%
Designer / Developer	411	117	28.4%	527	535	1.4%	702	33.3%	828	57.0%	1,976	274.8%
Clerical	1,509	4	0.3%	1,513	1,980	30.9%	2,586	70.9%	3,051	101.6%	7,220	377.2%
Self Employed	566	91	16.2%	657	741	12.8%	970	47.6%	1,139	73.3%	2,720	313.9%
Advisor or Agent	540	88	16.3%	628	708	12.7%	927	47.7%	1,092	73.9%	2,594	313.2%
Educator	2	0	22.6%	2	2	6.4%	3	40.2%	4	62.7%	9	288.7%
Specialist or Consultant	1,824	71	3.9%	1,895	2,391	26.2%	3,140	65.7%	3,683	94.4%	8,742	361.4%
Editor	40	2	4.0%	42	53	25.9%	69	64.9%	82	94.8%	194	362.0%
Industrial Researchers	1,018	80	7.9%	1,098	1,326	20.8%	1,745	59.0%	2,063	87.9%	4,899	346.3%
Scientist	542	181	33.5%	723	706	-2.4%	929	28.5%	1,093	51.0%	2,602	259.7%
Maintenance Engineer	3,172	254	8.0%	3,427	4,137	20.7%	5,444	58.9%	6,433	87.7%	15,238	344.7%
Civil Engineer	209	64	30.5%	272	273	0.1%	358	31.3%	423	55.1%	1,003	268.2%
Production Engineer	703	333	47.3%	1,036	913	-11.9%	1,212	17.0%	1,414	36.5%	3,382	226.4%
Power distribution Engineer	1,250	421	33.7%	1,671	1,632	-2.3%	2,140	28.1%	2,533	51.6%	6,012	259.8%
Construction Engineer	284	58	20.5%	342	371	8.6%	487	42.5%	572	67.3%	1,366	299.5%
Sales Exec	1,797	261	14.5%	2,057	2,348	14.2%	3,080	49.7%	3,632	76.6%	8,617	318.9%
Marketing Personnel	1,823	260	14.2%	2,083	2,388	14.7%	3,138	50.7%	3,693	77.3%	8,781	321.6%
General Semi Skilled Worker	3,142	80	2.6%	3,223	4,105	27.4%	5,404	67.7%	6,356	97.2%	15,072	367.7%
General Labour	5,087	0	0.0%	5,087	6,660	30.9%	8,732	71.6%	10,283	102.1%	24,464	380.9%
Other Employees	3,513	219	6.2%	3,731	4,589	23.0%	6,039	61.8%	7,112	90.6%	16,890	352.7%
Administrative workers	1,805	48	2.7%	1,853	2,367	27.7%	3,096	67.0%	3,635	96.1%	8,680	368.3%
Total	39,116	4,094	10.5%	43,210	51,133	18.3%	67,156	55.4%	79,104	83.1%	187,982	335.0%

Table 10: MEH LCEGS Current Employment and Net Zero 2030 and 2050 Estimated Employment Requirements – Renewable Energy

SOC	Renewable Energy				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees		# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
		2019/20	Shortage as a % of Total Employees									
Technicians	1,915	331	17.3%	2,246	2,507	11.6%	3,278	45.9%	3,874	72.5%	9,207	309.9%
Snr Management SME	6,418	593	9.2%	7,011	8,407	19.9%	10,993	56.8%	12,978	85.1%	30,736	338.4%
Supervisory	6,493	593	9.1%	7,085	8,466	19.5%	11,161	57.5%	13,138	85.4%	31,315	342.0%
Middle / Junior Management	6,300	572	9.1%	6,872	8,229	19.8%	10,806	57.2%	12,694	84.7%	30,255	340.3%
Designer / Developer	488	106	21.6%	594	639	7.6%	838	41.1%	987	66.1%	2,347	295.2%
Clerical	3,235	6	0.2%	3,241	4,237	30.7%	5,551	71.3%	6,547	102.0%	15,539	379.5%
Self Employed	421	39	9.4%	460	550	19.6%	722	57.0%	847	84.1%	2,018	338.7%
Advisor or Agent	137	23	17.0%	160	178	11.6%	235	47.1%	276	72.8%	656	310.9%
Educator	0	0	11.4%	0	0	17.5%	0	54.0%	0	87.7%	0	327.6%
Specialist or Consultant	3,108	89	2.9%	3,197	4,071	27.3%	5,316	66.3%	6,290	96.7%	14,938	367.2%
Editor	44	1	3.3%	46	58	26.5%	77	66.6%	90	95.9%	213	363.7%
Industrial Researchers	209	15	7.0%	224	273	22.1%	360	60.9%	423	88.9%	1,005	348.8%
Scientist	79	24	29.8%	103	104	1.2%	136	32.6%	160	55.7%	379	268.7%
Maintenance Engineer	6,911	382	5.5%	7,293	9,040	23.9%	11,877	62.9%	13,989	91.8%	33,202	355.2%
Civil Engineer	210	44	21.2%	254	274	7.9%	359	41.3%	425	67.0%	1,010	297.4%
Production Engineer	989	276	27.9%	1,266	1,296	2.4%	1,702	34.5%	2,001	58.1%	4,760	276.1%
Power distribution Engineer	3,272	886	27.1%	4,158	4,284	3.0%	5,617	35.1%	6,625	59.4%	15,725	278.2%
Construction Engineer	455	57	12.5%	511	596	16.6%	779	52.4%	921	80.2%	2,189	328.0%
Sales Exec	3,020	280	9.3%	3,300	3,946	19.6%	5,176	56.9%	6,111	85.2%	14,539	340.6%
Marketing Personnel	3,095	284	9.2%	3,380	4,038	19.5%	5,317	57.3%	6,231	84.4%	14,881	340.3%
General Semi Skilled Worker	6,615	120	1.8%	6,735	8,634	28.2%	11,366	68.8%	13,379	98.6%	31,851	372.9%
General Labour	8,039	0	0.0%	8,039	10,519	30.9%	13,808	71.8%	16,228	101.9%	38,687	381.3%
Other Employees	8,725	397	4.5%	9,121	11,407	25.1%	14,926	63.6%	17,620	93.2%	42,011	360.6%
Administrative workers	3,392	61	1.8%	3,454	4,432	28.3%	5,815	68.4%	6,839	98.0%	16,325	372.7%
Total	73,571	5,179	7.0%	78,750	96,186	22.1%	126,216	60.3%	148,672	88.8%	353,789	349.3%

Table 11: MEH LCEGS Current Employment and Net Zero 2030 and 2050 Estimated Employment Requirements – Environmental

SOC	Environmental				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees		# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
		2019/20	Shortage as a % of Total Employees									
Technicians	1,299	297	22.9%	1,596	1,698	6.4%	2,229	39.6%	2,625	64.5%	6,241	291.0%
Snr Management SME	2,064	213	10.3%	2,277	2,701	18.6%	3,551	55.9%	4,169	83.1%	9,933	336.1%
Supervisory	2,230	237	10.6%	2,467	2,908	17.9%	3,828	55.2%	4,504	82.6%	10,713	334.2%
Middle / Junior Management	2,155	228	10.6%	2,383	2,812	18.0%	3,694	55.0%	4,357	82.8%	10,349	334.2%
Designer / Developer	721	204	28.3%	925	943	1.9%	1,239	33.9%	1,453	57.1%	3,464	274.4%
Clerical	1,130	2	0.2%	1,133	1,479	30.6%	1,946	71.8%	2,283	101.6%	5,421	378.5%
Self Employed	591	73	12.4%	664	771	16.0%	1,015	52.8%	1,196	80.0%	2,844	328.0%
Advisor or Agent	408	68	16.7%	476	534	12.2%	700	47.0%	820	72.4%	1,960	311.7%
Educator	35	11	31.6%	47	47	-0.2%	61	30.8%	72	53.6%	171	265.8%
Specialist or Consultant	1,347	47	3.5%	1,394	1,761	26.3%	2,304	65.3%	2,720	95.2%	6,482	365.1%
Editor	99	4	4.0%	103	129	25.9%	170	65.1%	199	94.3%	474	361.6%
Industrial Researchers	573	45	7.8%	618	749	21.1%	984	59.2%	1,158	87.3%	2,753	345.3%
Scientist	196	69	35.0%	265	257	-3.2%	337	27.1%	397	49.5%	946	256.6%
Maintenance Engineer	2,832	178	6.3%	3,010	3,700	22.9%	4,861	61.5%	5,728	90.3%	13,609	352.1%
Civil Engineer	479	132	27.5%	612	626	2.4%	822	34.5%	969	58.5%	2,304	276.7%
Production Engineer	637	222	34.9%	859	832	-3.2%	1,092	27.0%	1,288	49.9%	3,067	256.9%
Power distribution Engineer	1,385	451	32.6%	1,836	1,812	-1.3%	2,373	29.3%	2,797	52.4%	6,656	262.6%
Construction Engineer	609	114	18.7%	723	796	10.1%	1,047	44.7%	1,230	70.0%	2,926	304.5%
Sales Exec	1,196	147	12.3%	1,343	1,570	16.9%	2,054	52.9%	2,410	79.4%	5,764	329.1%
Marketing Personnel	1,110	129	11.6%	1,239	1,457	17.6%	1,906	53.8%	2,241	80.9%	5,335	330.6%
General Semi Skilled Worker	2,757	62	2.2%	2,818	3,607	28.0%	4,734	68.0%	5,565	97.5%	13,248	370.0%
General Labour	1,997	0	0.0%	1,997	2,611	30.7%	3,426	71.5%	4,034	102.0%	9,597	380.6%
Other Employees	2,981	155	5.2%	3,135	3,892	24.1%	5,099	62.6%	6,036	92.5%	14,332	357.1%
Administrative workers	1,424	32	2.3%	1,456	1,858	27.7%	2,442	67.7%	2,873	97.4%	6,844	370.2%
Total	30,257	3,121	10.3%	33,378	39,549	18.5%	51,912	55.5%	61,127	83.1%	145,433	335.7%

1.13.2 Current Training Provision and Potential for Upskilling of the Current Workforce within each Level 2 sub-sector

In this section we explore both the current training capacity within the MEH region and the potential for upskilling of the workforce.

Current training capacity takes into account the current offerings from local training providers for each sub-sector and is an estimate of the provision of services compared with a national average. It takes into account those training services provided through both the traditional education system and training companies. It does not include training provided in-house by other company employees.

The potential for upskilling the workforce refers to the potential for each sub-sector to either upskill their current workforce and/or upskill workers from other sectors to easily move into the sub-sector being measured. It refers to the rate of upskilling potential compared with the rate of increase in demand, combined with the ability of the skill-sets to upgrade in line with the rate of increase in demand and the rate of new technology and methods introduction.

Both the current training capacity and the potential for upskilling the workforce of the sector have been calculated by attributing a factor of 'Low', 'Medium' or 'High' per product or service at the Local Authority level, which has been given the corresponding value of 1 = Low; 2 = Medium and 3 = High. We have then taken the average of those values for the products and services grouped together for the Levels to produce an index for both factors.

For example, there are 30 products and services within the Level 3 sub-sector of Windows, within the Building technologies (Low Carbon) sub-sector. For each Local Authority (using Amber Valley as an example), each product and service was allocated a current training capacity factor:

21 products and services listed as 'High' with a score of 3
9 products and services listed as 'Medium' with a score of 2
0 products and services listed as 'Low' with a score of 1

Calculation:

$$\frac{(21 \times 3) + (9 \times 2) + (0 \times 1)}{30} = 2.7$$

The same process was applied with regards to the potential for upskilling the workforce, with the same example of Amber Valley scoring:

15 products and services listed as 'High' with a score of 3
15 products and services listed as 'Medium' with a score of 2
0 products and services listed as 'Low' with a score of 1

Calculation:

$$\frac{(15 \times 3) + (15 \times 2) + (0 \times 1)}{30} = 2.5$$

Both the current training capacity and upskilling potential indexes have been calculated for the 2769 products and services at Level 5 of the dataset, for each Local Authority, with the average being used to plot graphs comparing the two factors at Level 2 for the MEH region and the nine LEPs. This allows us to examine which sub-sectors have a current workforce which has a potential for upskilling combined with good current training capacity and which sub-sectors could benefit from additional training capacity.

Figure 39 illustrates the current training capacity compared with the upskilling potential of Level 2 sub-sectors of the MEH region, with the bubbles sized by sales £m. This graph shows how the Level 2 sub-sectors perform **relative to each other** within the MEH region. Each LEP has its own graph, with different patterns, for example, Photovoltaics upskilling potential is very high in the Black Country, but low in Greater Lincolnshire and conversely, Water and Waste Water Treatment upskilling potential is higher in Greater Lincolnshire than the Black Country.

Figure 39: MEH LCEGS Current Training Capacity against the Potential Upskilling of the Workforce by Level 2 Sub-sector

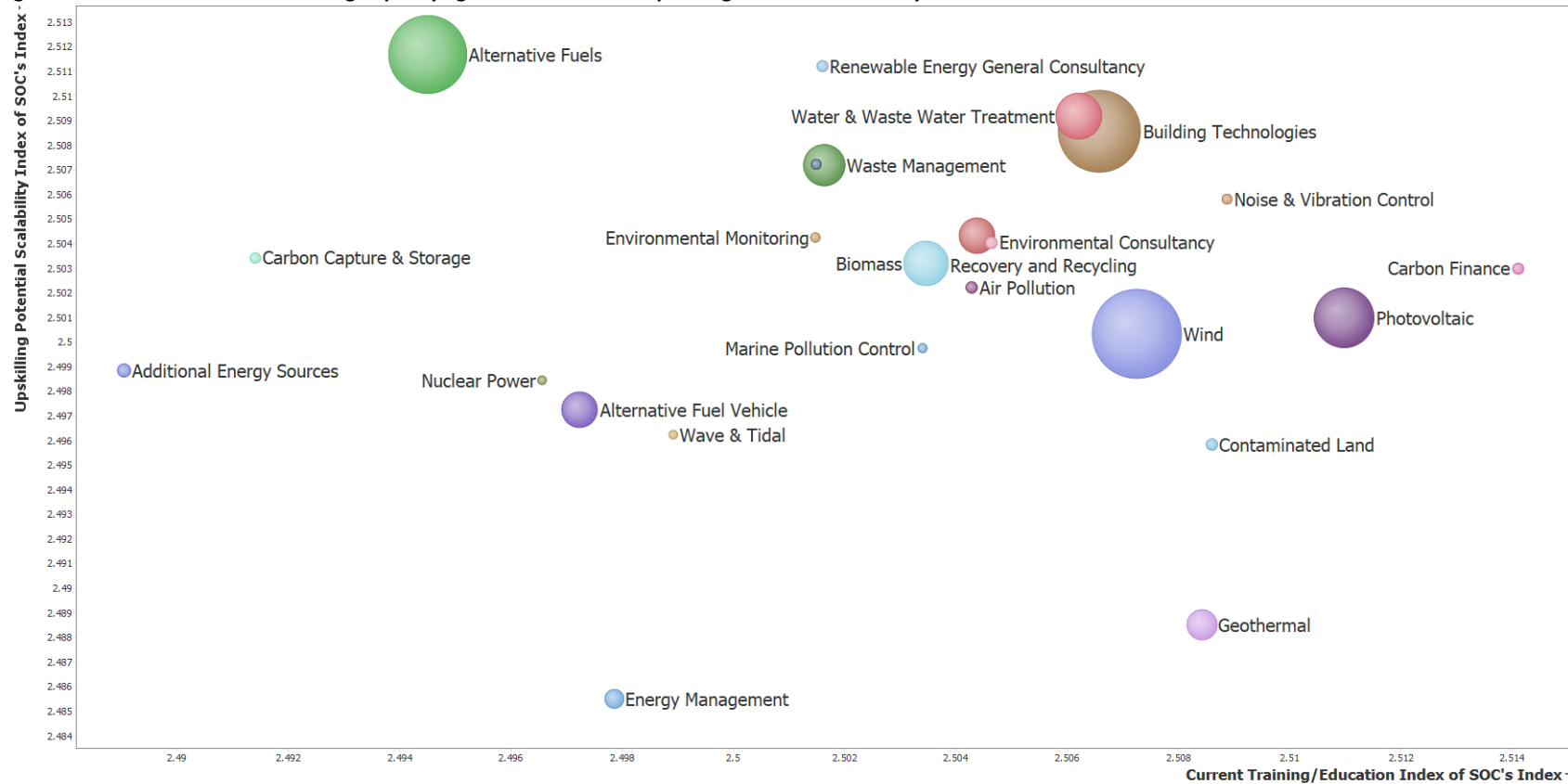


Figure 39 shows that Building Technologies holds a strong position, with good current training capacity combined with a strong potential for upskilling. With 30% of UK carbon emissions being emitted from domestic heating, insulating windows and other building technologies have the potential to impact significantly on CO2 reduction.

1.13.3 Potential of Level 2 sub-sectors to impact on CO₂ reduction

In this section we estimate CO₂ reduction potential for Level 2 sub-sectors within the MEH region. As outlined in the introduction to the Low Carbon Environmental Goods and Services section of this report, there is a wide range of variance within academia regarding how to accurately measure the CO₂ reduction potential of products and services. As such, the potential reduction in CO₂ has been estimated, considering the activities within each area, the localization of chains and networks of supply and the technologies in use or being produced.

The CO₂ reduction potential has been determined for each Level 2 Sub-sector in each Local Authority, by estimating 'High', 'Medium' and 'Low'.

The 'Low', 'Medium' and 'High' categories have also been allocated a scale of Low = 1, Medium = 2 and High = 3, with the averages across the Local Authorities within each LEP being used to provide a visual representation of levels of CO₂ reduction potential within the MEH region and each LEP.

A worked example for Waste Management in the D2N2 LEP, with 17 Local Authorities:

7 Local Authorities estimated as 'High' with a score of 3

4 Local Authorities estimated as 'Medium' with a score of 2

6 Local Authorities estimated as 'Low' with a score of 1

Calculation:

$$\frac{(7 \times 3) + (4 \times 2) + (6 \times 1)}{17} = 1.9$$

Figures 40 and 41 show the estimated CO₂ reduction potential against the sales (£m) for each Level 2 sub-sector, with the bubbles sized for sales.

Figure 40 illustrates the dominance of the Wind Sub-sector, in terms of both sales and CO₂ reduction potential in the region, compared with the other Level 2 sub-sectors. Conversely, it also highlights the relatively small size and CO₂ reduction potential of the Environmental Consultancy Sub-sector.

Figure 41 provides the same information, but with Wind and Environmental Consultancy removed, to assess the relative impact of the other sub-sectors. The data in figure 41 provide a visualization of the relative market sizes and CO₂ reduction potential of the sub-sectors relative to the other sub-sectors in the graph (excluding Wind and Environmental Consultancy). Alternative Fuels and Building Technologies have a strong position, with large market and high CO₂ reduction potential.

Figure 40: MEH LCEGS Estimated CO2 Reduction Potential against Sales (£m) by Level 2 Sub-sector

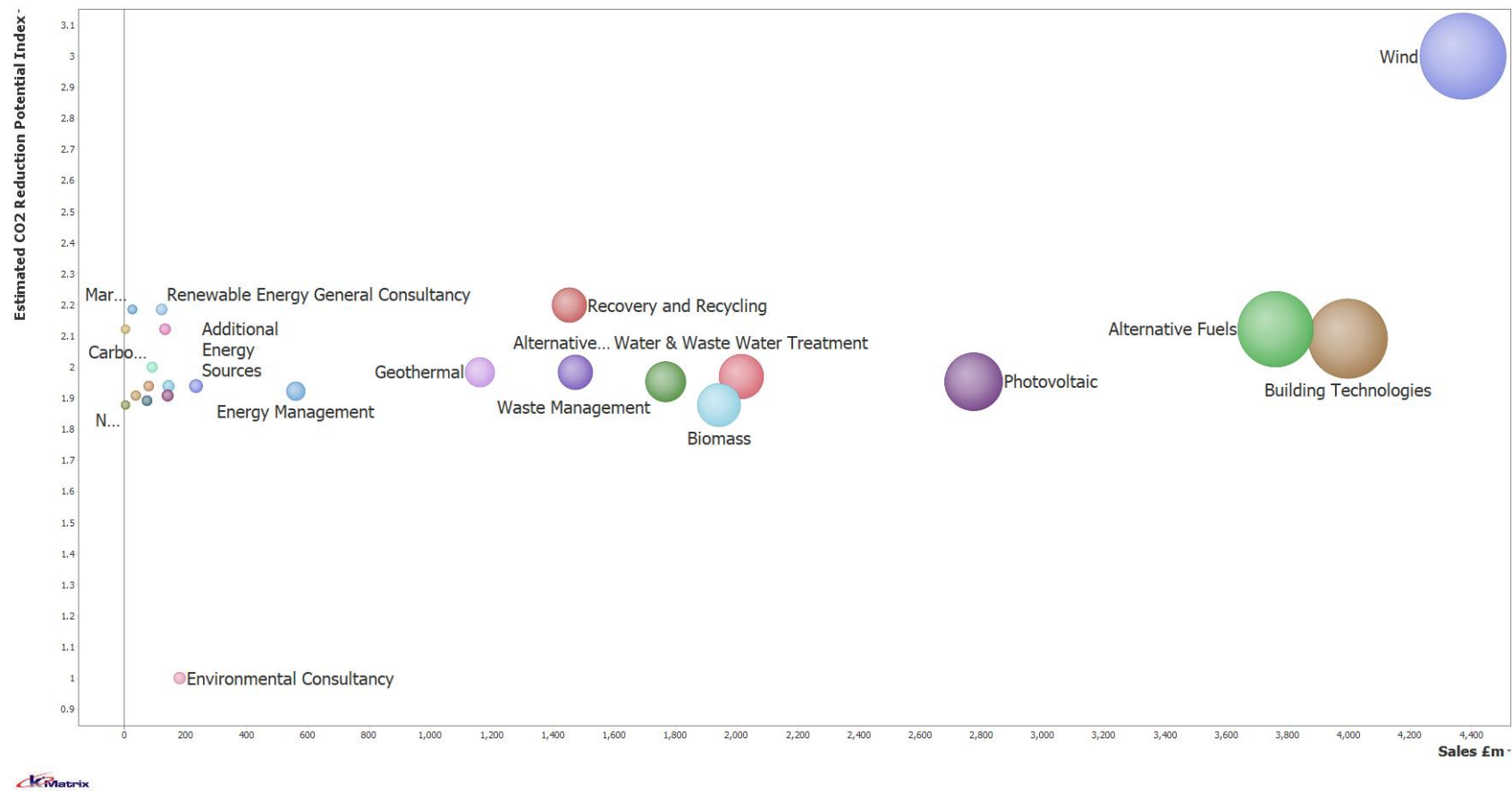
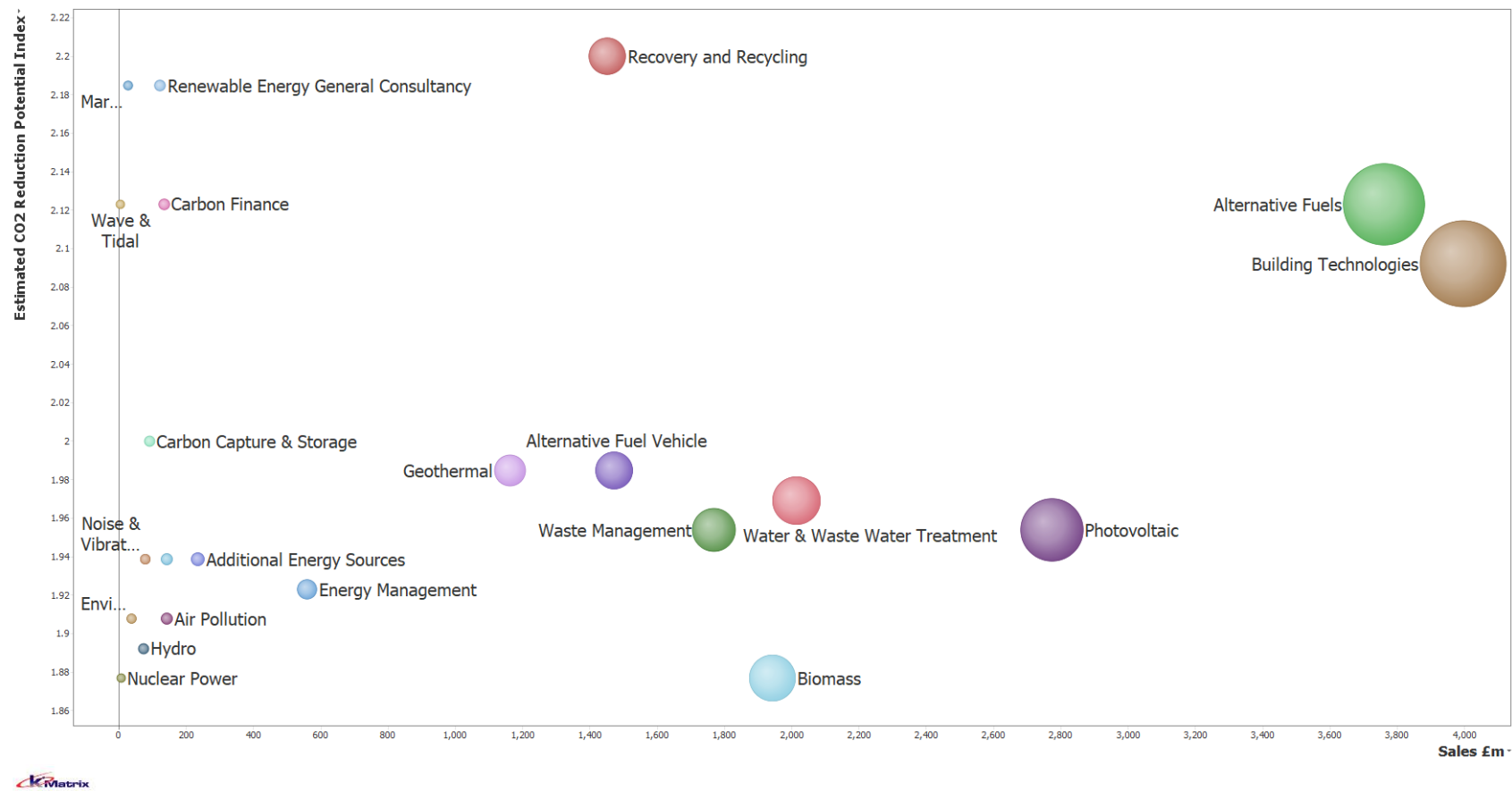


Figure 41: MEH LCEGS Estimated Potential CO2 Reduction against Sales (£m) by Level 2 Sub-sector – Wind and Environmental Removed



1.14 Overview of the LEP's within the MEH

This section represents an overview of the LEP's within the MEH region, with regards to growth rates and proportionality of the LCEGS market share.

It must be reiterated that some LEP's share Local Authorities, leading to double counting if the metrics for each LEP are summed, so this data should not be used for absolute comparative purposes, but is illustrative of the size of the sector each LEP represents and the rate of growth of the sector in each area.

Table 12 shows the sales value for the LCEGS sector for each LEP for the reporting period 2017/18 to 2019/20 and the year on year growth rates in red.

Table 12: LEP Sales and growth rates from 2017/18 to 2019/20

LEP	Sales £m 2017/18	Growth %	Sales £m 2018/19	Growth %	Sales £m 2019/20
Black Country	2,089.3	5.6%	2,206.8	6.1%	2,340.7
Coventry & Warwickshire	3,106.4	5.1%	3,265.2	6.1%	3,465.6
D2N2	4,848.0	4.1%	5,044.8	4.6%	5,277.1
Greater Birmingham & Solihull	5,455.6	6.6%	5,815.1	7.6%	6,255.4
Greater Lincolnshire	2,245.7	3.8%	2,330.1	4.1%	2,426.6
Leicester & Leicestershire	2,544.4	4.1%	2,647.6	4.6%	2,768.6
Stoke & Staffordshire	2,380.6	5.9%	2,521.9	6.6%	2,688.1
Marches	1,583.8	6.2%	1,682.2	6.4%	1,790.0
Worcestershire	1,354.6	5.2%	1,424.5	6.0%	1,509.5
MEH Region	23,845.2	5.2%	25,082.2	5.9%	26,556.2

Table 12 illustrates that the Greater Birmingham and Solihull LEP is the largest, with some of the strongest growth rates, while D2N2 is the second largest with some of the weakest growth rates. Worcestershire LEP and Marches LEP are the smallest and saw average or above average growth.

Figure 42: LEP Sales, Employment and Companies 2019/20 as % of MEH

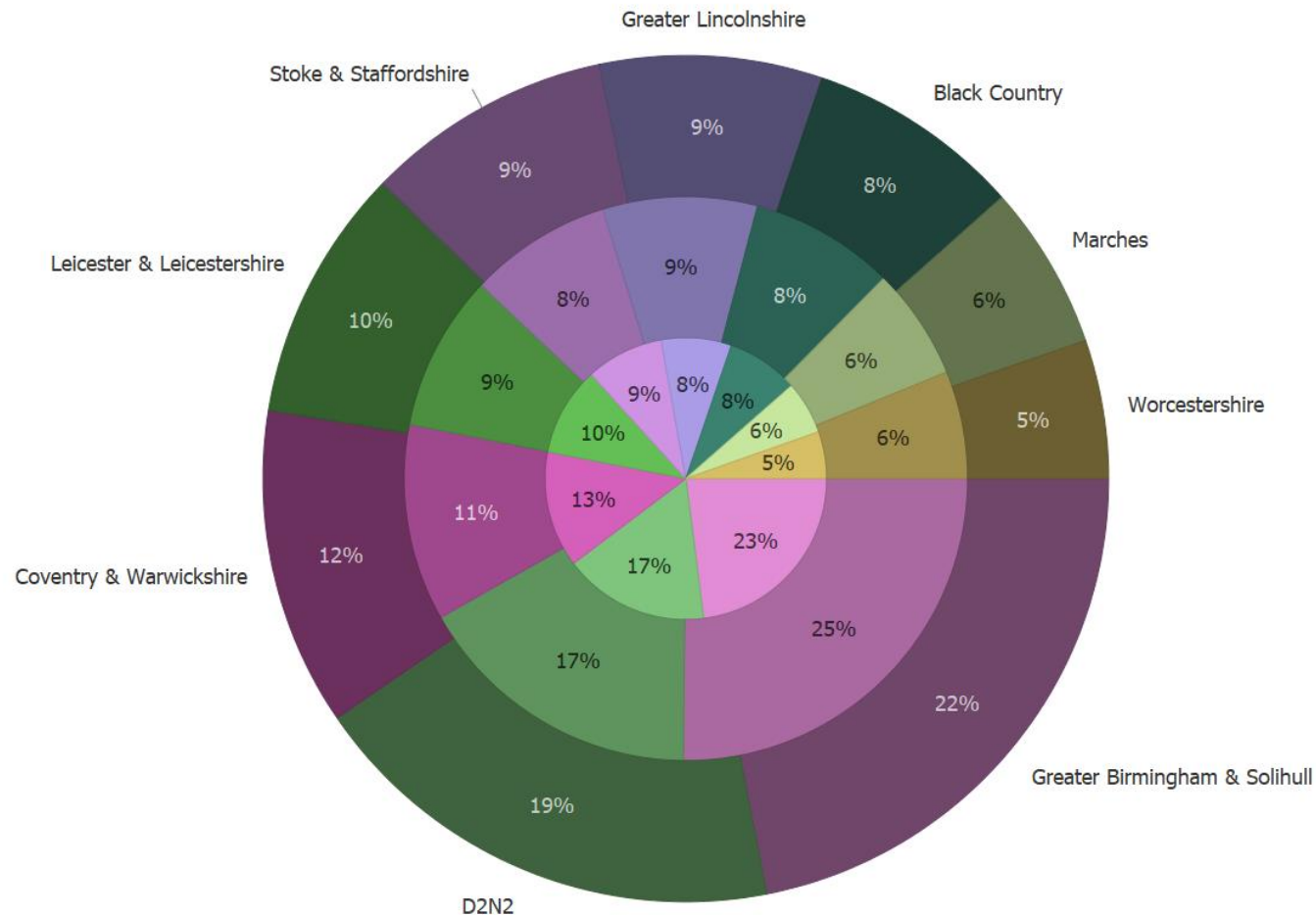


Figure 42 compares the LEP's within the MEH for sales (outer circle), companies (middle circle), and employment (inner circle).

It provides an indication of proportionality between the LEP's, with Greater Birmingham & Solihull being the largest, with 22% of sales, 25% of companies and 23% of employees, followed by D2N2 and Coventry & Warwick, with Worcestershire being the smallest with 5% of sales, 6% of companies and 5% of employees.

Note: these are different to the proportions reported in the LEP reports. The LEP reports compare the size of the LEP to the sum of all 65 Local Authorities (the MEH regional value), without double counting. Here we compare multiple LEPs who 'share' Local Authorities. This figure provides a general indication of the differences in size.

Figure 43: LEP Private Equity, Venture Capital and Other Investment into R&D 2019/20 as % of MEH

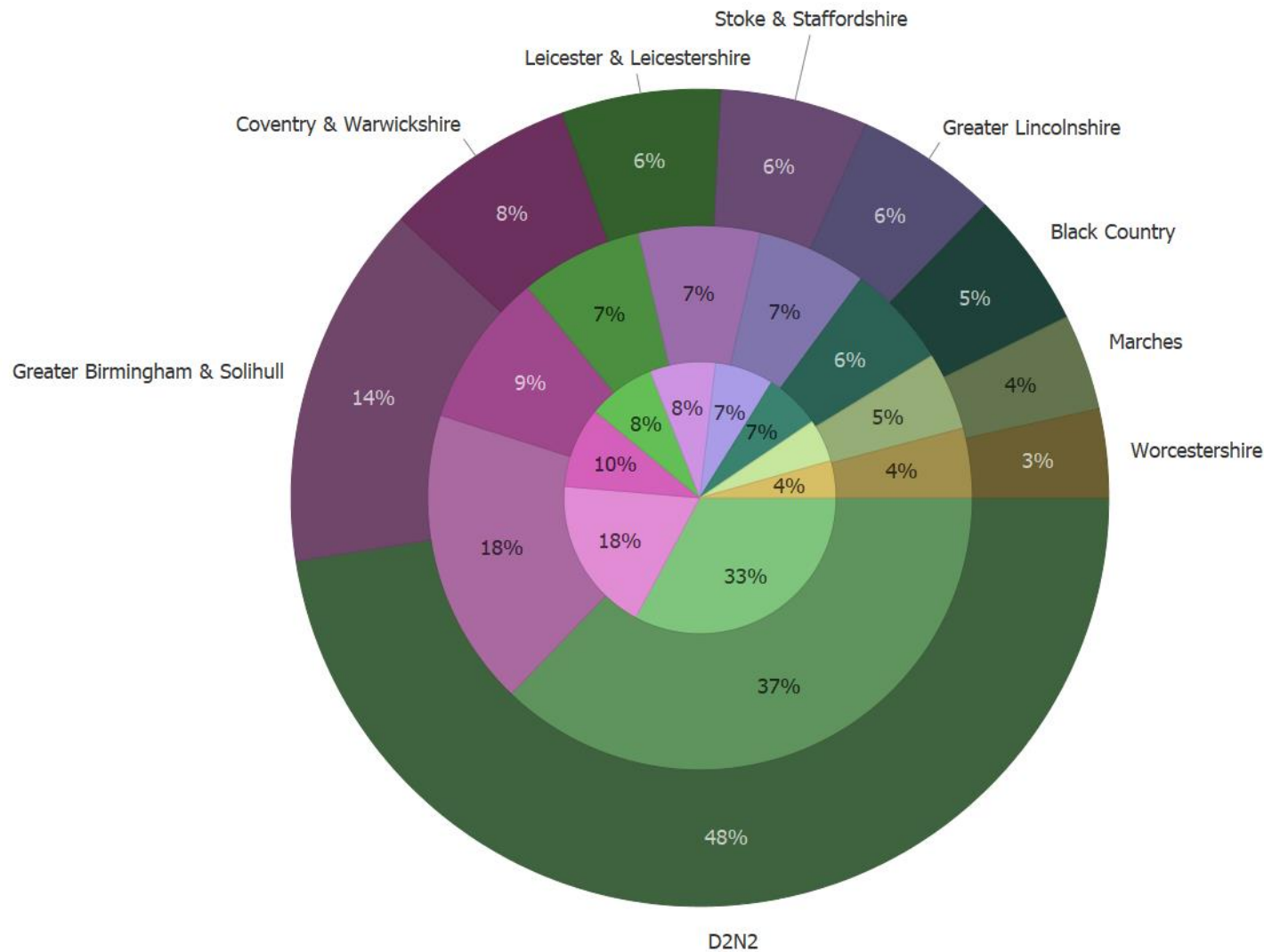


Figure 43 compares the LEP's within the MEH for Private Equity (outer circle), Venture Capital (middle circle), and Other (inner circle) investment into R&D.

It provides an indication of proportionality between the LEP's, D2N2 being the largest due to the high investment into the Nuclear sub-sector. The other LEPs saw investment proportions in line with Sales.

Note: the shared Local Authorities within some LEPs will cause double counting. D2N2 does not share any Local Authorities.

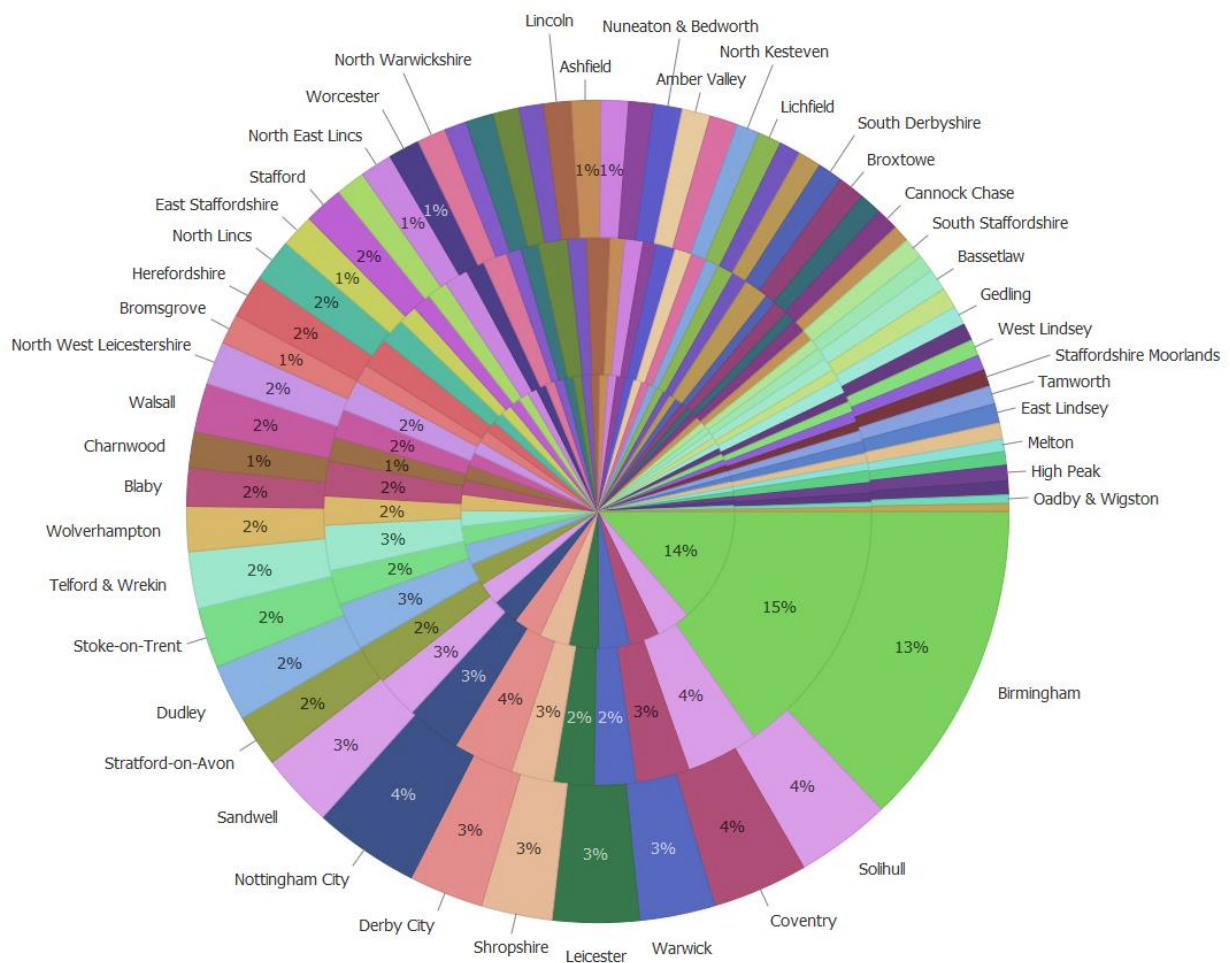
2. MEH Regions' LCEGS by Local Authority

2.1 LCEGS by Local Authority

This section of the report analyses the MEH's 65 Local Authorities.

Figure 44 shows LCEGS for 2019/20 split by Local Authority for sales (outer circle), companies (middle circle) and employment (inner circle). Birmingham accounts for 13% of MEH LCEGS sales, 15% of companies and 14% of employment. The top 10 Local Authorities are Birmingham, Solihull, Coventry, Warwick, Leicester, Shropshire, Nottingham City, Derby City, Sandwell and Dudley. The smallest Local Authorities are Oadby and Wigston and Rutland with less than 1% of the market.

Figure 44: MEH's LCEGS 2019/20 by Local Authority for Sales, Companies and Employment



Local Authorities are analysed in more detail, by year, by economic measure and by LCEGS activity in the following section.

2.2 Local Authority Analysis by Year and Sector

Tables 13a, 13b, 14a and 14b show the key metrics of Sales, Available Sales, GVA, Number of Companies and Number of Employees for each Local Authority at the Sector Level for three years with growth rates.

Tables 13a and 13b show the Sales, Available Sales and GVA for the 65 Local Authorities. Sales represent the value of sales transactions (£m) and represent the turnover of companies. Available Sales (£m) provides a value for the portion of the market that is not 'locked' by long term contracts and is realistically available for market penetration by new market entrants, without the need for aggressive marketing or pricing strategies. GVA means the Gross Value Added and is the value of the transactions minus raw materials etc and represents the profit made.

Available sales fluctuate in all Local Authorities as contracts end and new ones begin and GVA tracks sales, with differences in growth rates between the two being within 0.1%.

Growth is similar between years for many of the Local Authorities, with the 2018/19-2019/20 growth less than 0.5% stronger than the previous year; with outliers such as Newark and Sherwood with 2.1% difference (12.3% & 14.4%) and Nuneaton and Bedworth with 2.7% difference (14.8% & 17.5%).

There is significant difference in the growth rates between Local Authorities, with the strongest growth between 2018/19 and 2019/20 seen in:

- Staffordshire Moorlands – 18.1%
- Nuneaton and Bedworth – 17.5%
- Tamworth – 14.8%
- Redditch – 14.6%
- Newark and Sherwood – 14.4%
- Stafford – 11.9%
- Warwick – 9.1%
- Birmingham – 8.6%
- Worcester – 8.5%
- Broxtowe – 8.3%

Tables 14a and 14b show the Number of Employees and Number of Companies for three years with growth rates.

The fluctuation between company and employees numbers are not entirely independent, but they don't necessarily track each other. The fluctuation of employees can represent employees who are redeployed into other sectors within the same company and do not necessarily represent unemployment. Redeployment to other sectors (often with the same product e.g. financial analytics) is often due to the fluctuations in contracts affecting Available Sales.

Company number fluctuations might be a result of trading in other sectors, not that the company itself has ceased to trade.

Table 13a: Local Authorities Sales, Available Sales and GVA 2017/18 to 2019/20

Local Authority	Sales £m					Available Sales £m					GVA £m				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
Amber Valley	269.5	3.3%	278.4	3.7%	288.8	164.5	-0.1%	164.3	5.9%	174.0	213.5	3.3%	220.5	3.7%	228.7
Ashfield	277.7	4.1%	289.1	4.8%	302.9	164.2	4.3%	171.2	7.6%	184.2	219.1	4.1%	228.1	4.7%	239.0
Bassetlaw	204.1	5.4%	215.1	6.1%	228.3	123.2	4.6%	128.9	7.1%	138.0	164.1	5.4%	173.0	6.1%	183.6
Birmingham	3,003.1	7.4%	3,225.4	8.6%	3,503.7	1,758.1	9.5%	1,925.8	6.7%	2,054.1	2,423.2	7.3%	2,600.9	8.5%	2,821.4
Blaby	351.6	7.1%	376.7	8.0%	407.0	208.7	9.8%	229.1	3.4%	236.8	275.5	7.1%	295.1	8.0%	318.9
Bolsover	197.0	4.0%	204.8	4.6%	214.3	120.4	0.4%	120.9	3.7%	125.5	158.2	4.0%	164.4	4.6%	172.0
Boston	132.3	2.4%	135.6	2.6%	139.1	81.4	0.5%	81.9	2.7%	84.1	103.8	2.4%	106.4	2.6%	109.1
Bromsgrove	288.8	4.0%	300.4	4.6%	314.2	174.5	1.5%	177.1	5.9%	187.6	224.4	4.0%	233.4	4.6%	244.1
Broxtowe	246.5	7.8%	265.7	8.3%	287.8	145.2	10.2%	159.9	11.6%	178.4	195.6	7.8%	210.7	8.3%	228.3
Cannock Chase	217.5	1.0%	219.7	1.1%	222.2	132.5	1.1%	134.0	-1.1%	132.6	170.6	1.0%	172.3	1.1%	174.3
Charnwood	341.5	3.7%	354.3	4.0%	368.6	207.9	2.1%	212.3	4.8%	222.4	274.8	3.7%	285.0	4.0%	296.5
Chesterfield	271.8	0.8%	274.1	1.0%	276.8	165.0	-0.2%	164.8	0.7%	165.9	220.5	0.8%	222.4	1.0%	224.6
Coventry	887.2	6.0%	940.8	7.0%	1,006.4	527.4	6.1%	559.5	8.4%	606.3	703.3	6.0%	745.6	7.0%	797.7
Derby City	699.4	5.4%	736.9	5.8%	779.5	424.2	4.5%	443.4	7.1%	474.8	557.1	5.4%	587.0	5.8%	621.0
Derbyshire Dales	157.5	5.3%	165.9	6.1%	176.1	95.2	4.2%	99.2	6.7%	105.8	124.7	5.3%	131.3	6.1%	139.4
Dudley	528.1	4.8%	553.6	4.9%	580.5	313.2	4.5%	327.4	8.3%	354.5	417.9	4.8%	438.0	4.8%	459.2
East Lindsey	190.4	1.0%	192.2	1.0%	194.2	115.7	-0.6%	115.0	-0.6%	114.4	148.2	1.0%	149.7	1.0%	151.2
East Staffordshire	311.9	5.7%	329.8	6.4%	350.9	185.0	7.6%	199.1	6.0%	211.0	247.5	5.7%	261.7	6.4%	278.5
Erewash	148.8	1.6%	151.1	1.6%	153.6	88.4	4.2%	92.2	-1.7%	90.6	119.2	1.6%	121.1	1.6%	123.0
Gedling	182.4	4.2%	190.2	4.4%	198.6	110.7	4.3%	115.4	2.8%	118.6	144.2	4.2%	150.3	4.4%	157.0
Harborough	209.2	6.6%	223.0	7.2%	239.1	123.8	7.4%	133.0	6.1%	141.1	164.2	6.6%	175.1	7.2%	187.7
Herefordshire	402.2	5.1%	422.9	5.3%	445.1	242.7	3.8%	251.9	6.7%	268.7	316.7	5.1%	333.0	5.3%	350.6
High Peak	148.0	4.2%	154.2	4.9%	161.8	88.1	5.6%	93.1	3.5%	96.3	116.6	4.2%	121.5	4.9%	127.5
Hinkley & Bosworth	204.4	2.4%	209.3	2.4%	214.4	124.7	-1.4%	123.0	5.6%	129.8	160.3	2.4%	164.1	2.4%	168.1
Leicester	845.2	1.4%	857.1	1.6%	870.9	518.5	-2.1%	507.4	3.8%	526.9	659.0	1.4%	668.3	1.6%	679.1
Lichfield	228.0	1.7%	231.8	2.0%	236.4	139.3	-0.4%	138.7	1.8%	141.2	179.6	1.7%	182.6	2.0%	186.2
Lincoln	263.3	3.8%	273.4	4.0%	284.4	158.9	2.5%	162.9	5.1%	171.2	206.0	3.8%	214.0	4.0%	222.5
Malvern Hills	169.8	0.7%	170.9	0.7%	172.1	101.2	1.5%	102.7	2.6%	105.3	134.8	0.7%	135.7	0.7%	136.6
Mansfield	164.1	6.9%	175.4	7.2%	188.0	97.6	7.6%	105.0	8.2%	113.6	130.6	6.9%	139.6	7.2%	149.6
Melton	114.1	5.8%	120.7	6.7%	128.7	68.9	4.8%	72.2	10.1%	79.5	90.2	5.7%	95.4	6.7%	101.8
Newark and Sherwood	219.1	12.3%	246.0	14.4%	281.4	134.0	9.6%	146.8	14.3%	167.8	172.9	12.3%	194.2	14.4%	222.0
Newcastle-under-Lyme	212.4	1.5%	215.5	1.7%	219.2	126.5	0.8%	127.5	2.0%	130.1	168.7	1.5%	171.2	1.7%	174.2
North East Derbyshire	126.5	6.0%	134.2	6.3%	142.6	77.7	5.3%	81.8	4.2%	85.3	100.2	6.0%	106.3	6.3%	113.0

Table 13b: Local Authorities Sales, Available Sales and GVA 2017/18 to 2019/20

Local Authority	Sales £m					Available Sales £m					GVA £m				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
North East Lincs	301.9	5.3%	317.9	6.2%	337.5	181.3	4.7%	189.8	8.6%	206.2	237.0	5.3%	249.6	6.2%	265.0
North Kesteven	214.3	6.4%	228.0	7.1%	244.1	124.6	9.4%	136.3	9.8%	149.7	170.3	6.4%	181.2	7.1%	194.0
North Lincs	417.7	2.3%	427.2	2.5%	437.7	250.7	1.7%	254.8	2.3%	260.6	332.3	2.3%	339.8	2.5%	348.3
North Warwickshire	279.8	2.4%	286.5	2.8%	294.6	169.5	-0.5%	168.7	4.6%	176.4	221.1	2.4%	226.5	2.8%	232.9
North West Leicestershire	395.8	6.7%	422.5	7.6%	454.5	230.3	9.0%	251.1	6.9%	268.4	315.7	6.7%	337.0	7.6%	362.7
Nottingham City	1,038.7	0.7%	1,046.2	0.8%	1,055.0	607.6	2.4%	621.9	2.0%	634.3	812.3	0.7%	818.1	0.8%	825.0
Nuneaton & Bedworth	239.3	14.8%	274.7	17.5%	322.9	141.5	17.6%	166.5	16.8%	194.5	191.2	14.7%	219.5	17.5%	257.9
Oadby & Wigston	82.7	1.6%	84.1	1.8%	85.6	47.0	9.2%	51.4	0.3%	51.5	66.8	1.6%	67.9	1.8%	69.1
Reddich	199.8	13.4%	226.6	14.6%	259.6	121.0	13.4%	137.2	11.3%	152.6	159.4	13.4%	180.8	14.5%	207.1
Rugby	288.1	0.6%	289.8	0.6%	291.4	168.8	5.0%	177.2	-0.4%	176.5	227.9	0.6%	229.2	0.6%	230.5
Rushcliffe	264.2	3.0%	272.2	3.3%	281.2	153.9	7.3%	165.1	2.4%	169.1	210.9	3.0%	217.3	3.3%	224.5
Rutland	75.3	4.3%	78.5	4.7%	82.2	46.1	3.8%	47.9	4.8%	50.1	59.9	4.3%	62.5	4.8%	65.4
Sandwell	682.5	6.2%	724.6	7.2%	776.4	405.5	7.8%	437.2	5.7%	462.0	541.5	6.2%	574.9	7.1%	616.0
Shropshire	658.4	6.1%	698.9	6.4%	743.4	404.9	2.7%	415.6	8.5%	451.0	516.8	6.1%	548.5	6.4%	583.5
Solihull	893.7	5.5%	943.0	6.1%	1,000.6	520.8	8.2%	563.7	5.0%	591.7	693.0	5.5%	731.3	6.1%	775.9
South Derbyshire	232.6	5.4%	245.1	6.3%	260.5	137.6	5.1%	144.6	9.8%	158.8	182.3	5.4%	192.1	6.3%	204.2
South Holland	227.5	5.3%	239.5	5.3%	252.2	136.5	6.2%	145.0	2.7%	148.9	181.3	5.3%	190.9	5.3%	201.0
South Kesteven	269.3	2.2%	275.1	2.5%	282.0	161.8	1.9%	164.9	1.8%	167.9	213.1	2.2%	217.7	2.5%	223.2
South Staffordshire	193.6	5.1%	203.5	5.5%	214.7	116.7	1.9%	118.9	7.8%	128.2	156.1	5.1%	164.1	5.5%	173.2
Stafford	345.2	11.1%	383.5	11.9%	429.1	208.8	9.8%	229.3	12.2%	257.3	273.9	11.1%	304.2	11.8%	340.3
Staffordshire Moorlands	140.3	18.1%	165.8	18.1%	195.9	84.4	16.0%	97.9	22.6%	120.0	111.1	18.1%	131.2	18.0%	154.8
Stoke-on-Trent	576.2	3.1%	594.0	3.5%	614.9	345.8	4.9%	362.8	3.8%	376.8	451.2	3.1%	465.1	3.5%	481.4
Stratford-on-Avon	518.5	0.7%	522.2	0.8%	526.4	315.0	-1.7%	309.5	1.2%	313.2	412.1	0.7%	415.1	0.8%	418.4
Tamworth	155.4	14.7%	178.3	14.8%	204.8	93.3	12.9%	105.4	16.5%	122.7	119.2	14.7%	136.8	14.8%	157.0
Telford & Wrekin	523.1	7.1%	560.5	7.3%	601.5	314.7	5.9%	333.5	7.7%	359.1	417.0	7.1%	446.7	7.3%	479.4
Walsall	450.3	7.5%	484.2	7.6%	521.0	266.9	8.8%	290.3	9.5%	318.0	356.3	7.5%	383.0	7.6%	412.1
Warwick	689.0	7.7%	741.8	9.1%	809.4	419.7	3.1%	432.6	13.2%	489.5	549.9	7.7%	592.0	9.1%	645.8
West Lindsey	153.7	5.9%	162.8	6.3%	173.1	91.1	5.0%	95.7	7.1%	102.5	121.4	5.9%	128.6	6.3%	136.7
Wolverhampton	428.4	3.7%	444.4	4.1%	462.7	262.6	2.1%	268.1	2.7%	275.4	345.8	3.7%	358.7	4.1%	373.5
Worcester	287.1	7.2%	307.7	8.5%	333.7	172.0	8.9%	187.2	6.4%	199.2	227.8	7.2%	244.1	8.5%	264.8
Wychavon	251.7	2.8%	258.8	3.1%	266.9	150.6	3.1%	155.4	1.7%	158.0	198.1	2.8%	203.7	3.1%	210.1
Wyre Forest	157.3	1.7%	160.0	1.9%	163.0	94.4	2.4%	96.7	0.9%	97.5	122.5	1.7%	124.6	1.9%	127.0
Total	23,845.2	5.2%	25,082.2	5.9%	26,556.2	14,252.9	5.2%	14,989.7	6.1%	15,904.2	18,900.7	5.2%	19,880.9	5.9%	21,047.0

Table 14a: Local Authorities Companies and Employment from 2017/18 to 2019/20

Local Authority	# Employees					Total # Companies				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
Amber Valley	1,817	-0.7%	1,804	-5.7%	1,701	94	5.3%	99	8.3%	108
Ashfield	1,805	3.1%	1,861	12.1%	2,087	85	-2.9%	83	10.1%	91
Bassetlaw	1,315	3.4%	1,360	-1.6%	1,339	74	5.4%	78	10.4%	86
Birmingham	22,680	16.2%	26,358	3.4%	27,267	1,458	0.6%	1,468	15.0%	1,688
Blaby	2,939	16.1%	3,413	0.1%	3,417	204	0.2%	204	3.2%	211
Bolsover	1,055	27.9%	1,350	21.2%	1,636	62	3.0%	64	9.0%	69
Boston	999	4.4%	1,043	0.4%	1,047	72	-5.6%	68	4.4%	72
Bromsgrove	2,429	14.0%	2,770	7.0%	2,964	111	-6.0%	105	6.0%	111
Broxtowe	1,366	11.7%	1,526	5.8%	1,614	88	-1.2%	87	0.8%	88
Cannock Chase	1,531	-8.0%	1,409	-1.0%	1,395	79	6.0%	84	0.0%	84
Charnwood	3,060	1.7%	3,113	5.7%	3,291	147	-4.3%	141	-6.3%	132
Chesterfield	1,840	-4.2%	1,763	-6.2%	1,654	88	-0.2%	88	8.8%	96
Coventry	6,090	5.0%	6,395	16.0%	7,420	319	1.0%	322	-3.0%	312
Derby City	6,315	0.7%	6,359	-4.2%	6,092	366	-3.8%	353	0.6%	355
Derbyshire Dales	1,504	-9.3%	1,364	11.3%	1,518	68	1.3%	69	-2.7%	67
Dudley	4,087	10.8%	4,529	12.8%	5,110	268	-0.2%	268	10.8%	297
East Lindsey	1,085	5.0%	1,139	9.0%	1,241	71	0.0%	71	5.0%	74
East Staffordshire	2,441	-2.2%	2,387	7.7%	2,572	100	8.8%	109	12.7%	122
Erewash	1,260	2.6%	1,292	6.6%	1,377	62	6.6%	66	-0.4%	66
Gedling	1,216	13.2%	1,377	-2.8%	1,339	87	-4.8%	83	8.3%	90
Harborough	1,518	0.6%	1,527	4.6%	1,597	62	4.6%	65	-2.4%	63
Herefordshire	2,352	8.2%	2,544	-0.8%	2,522	175	-3.9%	169	9.1%	184
High Peak	1,006	-4.9%	958	2.1%	978	62	-3.9%	60	6.1%	64
Hinkley & Bosworth	1,633	-2.6%	1,590	3.4%	1,644	90	-2.6%	88	10.4%	97
Leicester	6,520	0.4%	6,547	2.4%	6,705	242	-7.6%	224	11.4%	250
Lichfield	1,796	-5.3%	1,701	-6.3%	1,593	101	-6.3%	95	-0.3%	94
Lincoln	1,733	10.8%	1,920	4.8%	2,013	141	-5.2%	134	8.8%	145
Malvern Hills	1,287	2.7%	1,321	10.7%	1,462	56	3.7%	58	-3.3%	56
Mansfield	1,315	9.9%	1,445	-0.1%	1,444	65	13.9%	74	-2.1%	73
Melton	949	13.8%	1,080	8.8%	1,175	45	10.8%	50	-4.3%	48
Newark and Sherwood	2,212	-32.6%	1,491	39.1%	2,075	69	8.4%	75	15.3%	87
Newcastle-under-Lyme	2,040	8.5%	2,213	-6.5%	2,068	83	1.5%	85	6.5%	90
North East Derbyshire	926	7.0%	991	12.0%	1,110	52	2.0%	53	1.0%	54

Table 14b: Local Authorities Companies and Employment from 2017/18 to 2019/20

Local Authority	# Employees					Total # Companies				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
North East Lincs	2,022	10.3%	2,230	-4.7%	2,126	139	-0.7%	138	8.3%	149
North Kesteven	1,687	-0.6%	1,676	16.4%	1,950	70	10.4%	78	7.4%	83
North Lincs	2,462	-1.7%	2,419	3.3%	2,498	142	4.3%	149	9.3%	162
North Warwickshire	1,948	8.4%	2,112	5.4%	2,227	130	10.4%	144	11.4%	160
North West Leicestershire	2,766	-1.2%	2,732	4.8%	2,862	164	14.7%	188	1.7%	191
Nottingham City	5,745	1.7%	5,844	-3.3%	5,652	302	6.7%	323	2.7%	331
Nuneaton & Bedworth	1,595	10.8%	1,766	21.8%	2,152	95	22.8%	117	10.7%	129
Oadby & Wigston	705	-2.4%	688	8.6%	747	27	0.6%	27	10.6%	30
Reddich	1,388	11.4%	1,547	4.4%	1,615	115	23.4%	142	22.4%	174
Rugby	2,334	-3.4%	2,254	-3.4%	2,176	129	-8.4%	118	-2.4%	115
Rushcliffe	1,860	1.0%	1,879	4.0%	1,955	102	5.0%	107	5.0%	113
Rutland	521	8.3%	564	-1.7%	554	25	-3.7%	24	7.3%	26
Sandwell	4,489	7.2%	4,812	15.2%	5,542	220	16.2%	256	10.2%	282
Shropshire	6,572	-3.9%	6,318	6.2%	6,706	237	11.1%	264	-3.9%	253
Solihull	6,996	5.5%	7,383	12.5%	8,307	388	9.5%	425	8.5%	461
South Derbyshire	1,513	4.4%	1,580	1.4%	1,602	68	-4.6%	64	-3.6%	62
South Holland	1,795	14.3%	2,052	0.3%	2,057	99	14.3%	114	3.3%	117
South Kesteven	1,937	3.2%	1,998	0.1%	2,001	96	7.2%	103	10.1%	113
South Staffordshire	1,399	-3.9%	1,345	4.1%	1,400	59	10.1%	65	4.1%	67
Stafford	2,146	9.0%	2,339	16.1%	2,715	102	2.0%	104	20.0%	124
Staffordshire Moorlands	1,140	13.1%	1,290	10.1%	1,420	48	9.2%	53	18.2%	62
Stoke-on-Trent	3,880	1.1%	3,922	6.1%	4,161	196	7.1%	210	0.1%	211
Stratford-on-Avon	4,725	6.7%	5,043	-4.3%	4,827	236	-0.3%	235	-7.3%	218
Tamworth	1,086	17.7%	1,279	10.7%	1,416	53	14.7%	61	24.7%	76
Telford & Wrekin	3,149	14.1%	3,594	-0.9%	3,563	241	11.1%	268	10.1%	295
Walsall	2,650	12.5%	2,981	11.5%	3,324	148	12.5%	167	15.5%	193
Warwick	5,897	14.6%	6,761	12.7%	7,618	223	15.6%	258	-1.3%	254
West Lindsey	1,189	14.0%	1,355	7.9%	1,462	61	-4.1%	58	14.9%	67
Wolverhampton	3,658	-4.3%	3,502	-2.3%	3,423	169	0.7%	170	2.7%	175
Worcester	1,916	17.2%	2,245	2.2%	2,294	108	0.1%	108	5.1%	114
Wychavon	2,047	-6.2%	1,920	-6.2%	1,802	157	9.8%	172	12.8%	194
Wyre Forest	1,059	5.7%	1,119	6.7%	1,194	49	11.7%	55	-1.3%	54
Total	176,395	5.7%	186,486	5.0%	195,817	9,551	3.7%	9,900	6.9%	10,581

2.3 Local Authority Analysis by Year – Level 1

Figures 45a and 45b shows the different profiles of the MEH Local Authorities when sales is split at Level 1. The Local authorities show variation in Environmental of 24% for Bassetlaw, Coventry, North East Lincs, Stratford-on-Avon and Wolverhampton, to 20% for Birmingham; Low carbon from 41% for Birmingham, Derby City and Nuneaton and Bedworth, to 36% for Broxtowe, High Peak, Leicester and North Warwickshire; and Renewable Energy from 42% for High Peak, Leicester and Rutland to 38% for Bromsgrove, Coventry, Derby City, Dudley, North East Derbyshire, North East Lincs, North Lincs, Nuneaton and Bedworth, Sandwell, Tamworth and Wolverhampton. This highlights that MEH's Local Authorities are not a homogeneous market, but they actually show subtle regional variations in activity within the LCEGS sector. This is further confirmed by Figure 45 below.

Figure 45a: MEH's Local Authorities LCEGS Sales 2019/20 (Level 1)

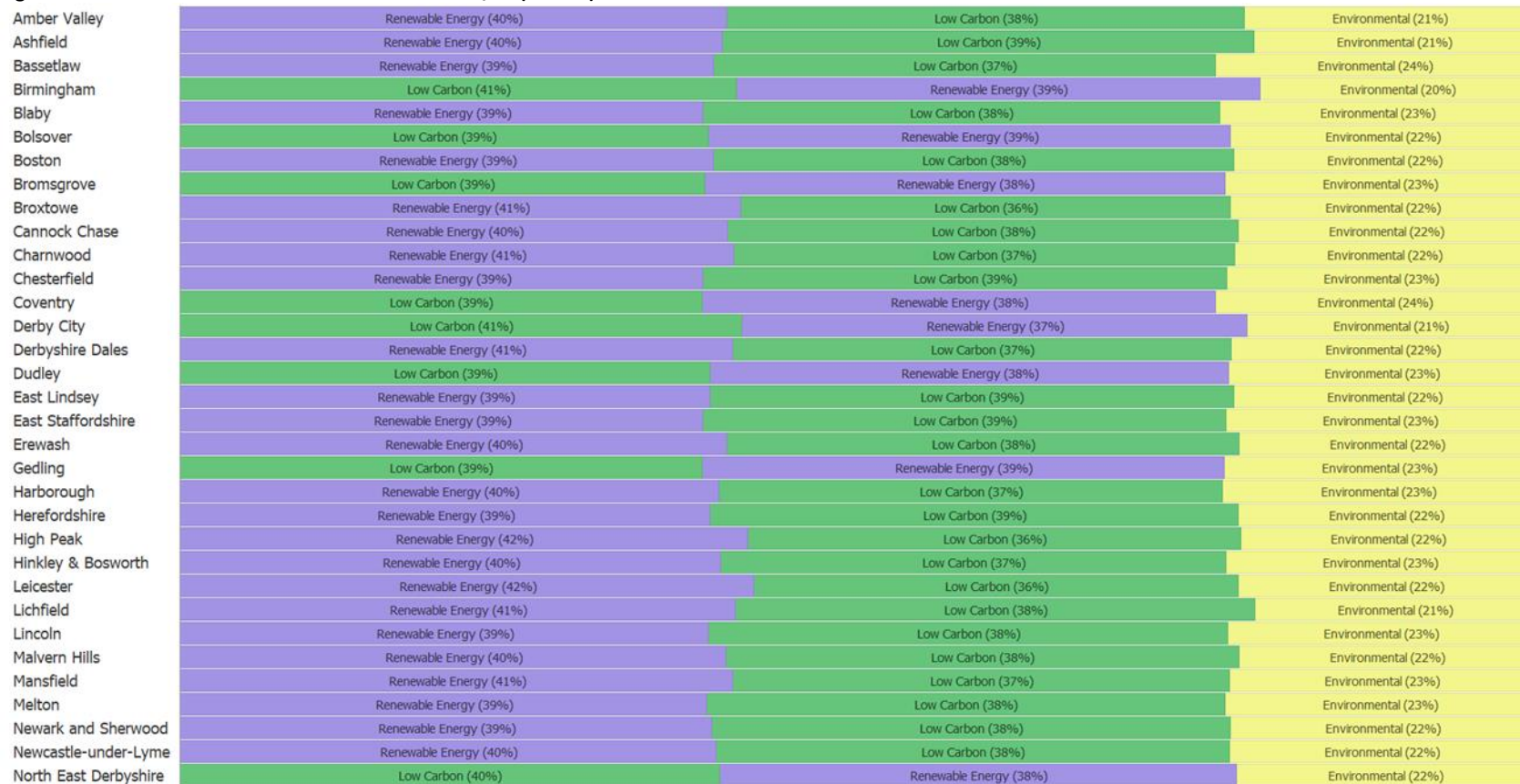
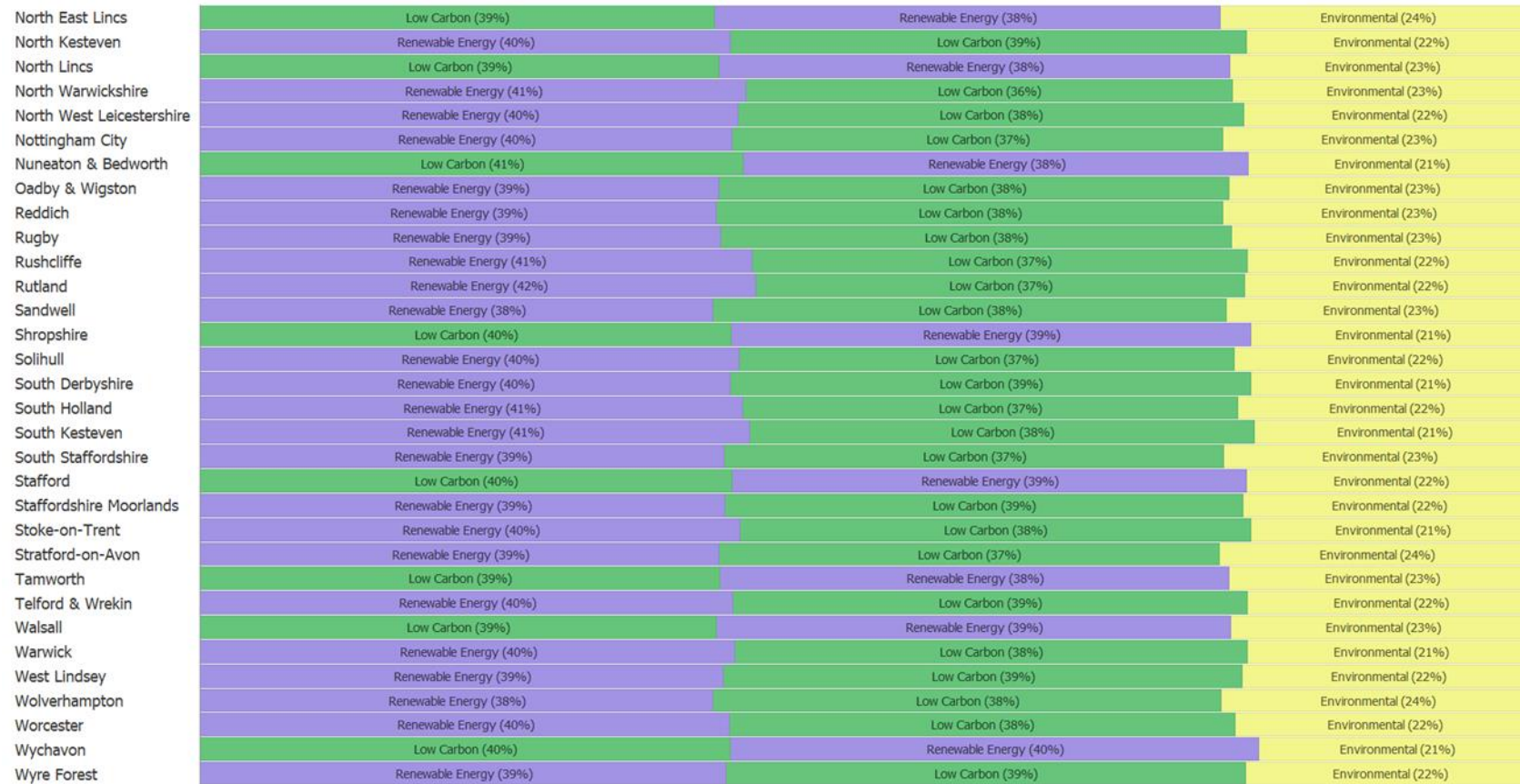


Figure 45b: MEH's Local Authorities LCEGS Sales 2019/20 (Level 1)



2.4 Local Authority Analysis by Year – Level 2

Figure 46 extends the analysis to include the Top 7 sub-sectors for each of MEH's Local Authorities. Typically, seven sub-sectors account for over 75% of the total value, but the sub-sectors and their rankings do differ across the 65 Local Authorities. There are consistent sub-sectors running through many of the MEH's Local Authorities and these include Wind, Building Technologies, Alternative Fuels and Photovoltaic, they are represented in all of MEH's Local Authorities and are consistent with the MEH region's top four sub-sectors.

Figure 46a: MEH's Local Authorities LCEGS Sales 2019/20 at Level 2

Amber Valley	Wind (17%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (11%)	Biomass (7%)	Waste...	Water & Waste...	17 others (21%)
Ashfield	Wind (17%)	Alternative Fuels (16%)	Building Technologies (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (20%)
Bassetlaw	Wind (17%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste Wa...	Waste...	Biomass (7%)	17 others (23%)
Birmingham	Wind (16%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (11%)	Biomass (7%)	Water & Waste...	Waste...	17 others (24%)
Blaby	Alternative Fuels (15%)	Wind (15%)	Building Technologies (14%)	Photovoltaic (11%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (22%)
Bolsover	Building Technologies (16%)	Wind (15%)	Alternative Fuels (15%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Boston	Wind (17%)	Alternative Fuels (15%)	Building Technologies (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (23%)
Bromsgrove	Alternative Fuels (16%)	Wind (15%)	Building Technologies (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (23%)
Broxtowe	Wind (18%)	Alternative Fuels (14%)	Building Technologies (14%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Cannock Chase	Wind (17%)	Building Technologies (16%)	Alternative Fuels (13%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Charnwood	Wind (19%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Chesterfield	Wind (17%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Waste...	Biomass (7%)	17 others (22%)
Coventry	Building Technologies (16%)	Wind (16%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste Wa...	Waste...	Biomass (7%)	17 others (22%)
Derby City	Building Technologies (16%)	Alternative Fuels (16%)	Wind (15%)	Photovoltaic (9%)	Water & Waste...	Biomass (7%)	Waste...	17 others (23%)
Derbyshire Dales	Wind (18%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (10%)	Biomass (8%)	Water & Waste...	Waste...	17 others (23%)
Dudley	Wind (17%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (9%)	Water & Waste...	Biomass (7%)	Waste...	17 others (23%)
East Lindsey	Wind (16%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (10%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
East Staffordshire	Wind (16%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (8%)	Waste Managem...	17 others (22%)
Erewash	Wind (17%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste...	Biomass (8%)	Alternative Fue...	17 others (22%)
Gedling	Alternative Fuels (16%)	Wind (15%)	Building Technologies (14%)	Photovoltaic (11%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (22%)
Harborough	Wind (17%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (21%)
Herefordshire	Building Technologies (16%)	Wind (16%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste...	Biomass (8%)	Waste...	17 others (21%)
High Peak	Wind (17%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Hinkley & Bosworth	Wind (16%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Leicester	Wind (18%)	Alternative Fuels (14%)	Building Technologies (13%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (21%)
Lichfield	Wind (18%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Lincoln	Wind (17%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Waste...	Biomass (7%)	17 others (22%)
Malvern Hills	Wind (18%)	Alternative Fuels (15%)	Building Technologies (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (21%)
Mansfield	Wind (18%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (22%)
Melton	Wind (16%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (22%)
Newark and Sherwood	Wind (15%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (12%)	Water & Waste...	Biomass (7%)	Waste...	17 others (23%)
Newcastle-under-Lyme	Wind (16%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (8%)	Waste...	17 others (22%)
North East Derbyshire	Building Technologies (16%)	Wind (16%)	Alternative Fuels (15%)	Photovoltaic (11%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (21%)

Figure 46b: MEH's Local Authorities LCEGS Sales 2019/20 at Level 2

North East Derbyshire	Building Technologies (16%)	Wind (16%)	Alternative Fuels (15%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (21%)
North East Lincs	Alternative Fuels (15%)	Wind (15%)	Building Technologies (15%)	Photovoltaic (10%)	Biomass (8%)	Water & Waste...	Waste Managem...	17 others (22%)
North Kesteven	Wind (16%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (21%)
North Lincs	Wind (16%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (10%)	Biomass (7%)	Waste Managem...	Water & Waste...	17 others (22%)
North Warwickshire	Wind (18%)	Building Technologies (14%)	Alternative Fuels (13%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
North West Leicestershire	Wind (17%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (23%)
Nottingham City	Wind (17%)	Alternative Fuels (14%)	Building Technologies (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (8%)	Waste...	17 others (22%)
Nuneaton & Bedworth	Building Technologies (16%)	Alternative Fuels (15%)	Wind (15%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Oadby & Wigston	Wind (17%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (22%)
Reddich	Wind (16%)	Building Technologies (16%)	Alternative Fuels (13%)	Photovoltaic (10%)	Water & Waste...	Biomass (8%)	Waste Managem...	17 others (22%)
Rugby	Wind (17%)	Alternative Fuels (15%)	Building Technologies (15%)	Photovoltaic (11%)	Water & Waste...	Waste...	Biomass (7%)	17 others (22%)
Rushcliffe	Wind (18%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (21%)
Rutland	Wind (18%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (21%)
Sandwell	Wind (16%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (7%)	Waste...	17 others (23%)
Shropshire	Building Technologies (16%)	Alternative Fuels (16%)	Wind (15%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (21%)
Solihull	Wind (18%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
South Derbyshire	Wind (16%)	Alternative Fuels (16%)	Building Technologies (14%)	Photovoltaic (11%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
South Holland	Wind (17%)	Building Technologies (15%)	Alternative Fuels (13%)	Photovoltaic (11%)	Biomass (7%)	Water & Waste...	Waste...	17 others (23%)
South Kesteven	Wind (17%)	Alternative Fuels (15%)	Building Technologies (14%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (21%)
South Staffordshire	Wind (16%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (8%)	Waste...	17 others (22%)
Stafford	Wind (17%)	Building Technologies (16%)	Alternative Fuels (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Staffordshire Moorlands	Wind (17%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Stoke-on-Trent	Wind (16%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (12%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Stratford-on-Avon	Wind (15%)	Building Technologies (14%)	Alternative Fuels (14%)	Photovoltaic (11%)	Water & Waste Wa...	Waste Managem...	Biomass (7%)	17 others (22%)
Tamworth	Wind (16%)	Building Technologies (16%)	Alternative Fuels (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (21%)
Telford & Wrekin	Wind (17%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (10%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Walsall	Wind (16%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)
Warwick	Wind (18%)	Building Technologies (16%)	Alternative Fuels (13%)	Photovoltaic (11%)	Water & Waste...	Waste...	Biomass (7%)	17 others (21%)
West Lindsey	Wind (16%)	Building Technologies (16%)	Alternative Fuels (14%)	Photovoltaic (11%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Wolverhampton	Wind (15%)	Alternative Fuels (15%)	Building Technologies (14%)	Photovoltaic (10%)	Water & Waste Wa...	Biomass (8%)	Waste...	17 others (22%)
Worcester	Wind (18%)	Building Technologies (15%)	Alternative Fuels (14%)	Photovoltaic (10%)	Water & Waste...	Waste...	Biomass (7%)	17 others (22%)
Wychavon	Wind (17%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (10%)	Biomass (8%)	Water & Waste...	Waste...	17 others (22%)
Wyre Forest	Wind (16%)	Building Technologies (15%)	Alternative Fuels (15%)	Photovoltaic (10%)	Water & Waste...	Biomass (7%)	Waste...	17 others (22%)

2.5 Local Authority LCEGS Company Size

In Section we look at the sizes of companies within each Local Authority, with Table 15a-15d showing a good range of growth rates between the Local Authorities.

Table 15a: Local Authorities Companies by Size from 2017/18 to 2019/20

Local Authority	# Start-up					# Micro					# SMEs				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
Amber Valley	5	5.6%	5	9.2%	5	29	4.1%	30	8.4%	32	47	5.8%	50	8.2%	54
Ashfield	4	-2.2%	4	9.2%	5	25	-2.8%	25	10.9%	27	43	-3.1%	41	10.0%	45
Bassetlaw	4	4.3%	4	10.7%	4	22	5.6%	23	9.7%	26	37	5.4%	39	10.8%	43
Birmingham	74	-0.4%	73	14.8%	84	440	0.6%	442	14.3%	506	727	0.7%	732	15.4%	845
Blaby	10	0.2%	10	2.7%	11	61	-0.1%	61	3.5%	63	102	0.3%	102	3.0%	105
Bolsover	3	3.2%	3	8.9%	3	19	3.0%	19	8.5%	21	31	2.9%	32	8.9%	35
Boston	4	-6.1%	3	4.2%	4	22	-5.4%	20	5.2%	22	36	-5.6%	34	4.2%	36
Bromsgrove	6	-4.9%	5	5.9%	6	33	-5.5%	31	6.9%	33	56	-6.2%	53	5.2%	55
Broxtowe	4	-1.2%	4	1.1%	4	26	0.4%	26	0.5%	26	44	-2.3%	43	1.1%	44
Cannock Chase	4	4.5%	4	1.5%	4	24	6.9%	25	-1.6%	25	40	5.5%	42	1.1%	42
Charnwood	7	-4.2%	7	-7.2%	7	45	-4.9%	42	-6.4%	40	73	-4.0%	70	-6.2%	66
Chesterfield	4	0.8%	4	8.6%	5	27	0.0%	27	8.3%	29	44	-0.4%	44	9.3%	48
Coventry	16	1.3%	16	-2.8%	16	96	0.3%	96	-2.1%	94	159	1.3%	161	-3.3%	156
Derby City	20	-1.5%	20	2.2%	21	110	-3.6%	106	0.6%	106	182	-4.3%	174	1.7%	177
Derbyshire Dales	3	0.4%	3	-2.3%	3	21	0.7%	21	-2.1%	20	34	1.7%	35	-3.0%	34
Dudley	13	0.2%	13	10.1%	15	81	0.0%	81	10.5%	89	134	-0.3%	134	11.3%	149
East Lindsey	4	0.0%	4	4.7%	4	21	0.7%	21	3.3%	22	35	-0.6%	35	6.1%	37
East Staffordshire	5	9.2%	5	12.2%	6	30	8.8%	33	13.3%	37	50	8.5%	54	12.4%	61
Erewash	3	7.0%	3	-1.1%	3	19	5.9%	20	0.9%	20	31	6.7%	33	-1.0%	33
Gedling	4	-2.7%	4	6.5%	4	26	-5.0%	25	7.7%	27	44	-5.0%	41	8.9%	45
Harborough	3	4.9%	3	-2.2%	3	19	4.2%	20	-2.8%	19	31	5.2%	33	-2.5%	32
Herefordshire	9	-3.4%	8	9.1%	9	53	-4.4%	50	10.3%	55	88	-3.6%	85	8.3%	92
High Peak	3	-4.9%	3	6.1%	3	19	-4.2%	18	6.1%	19	31	-3.6%	30	6.1%	32
Hinkley & Bosworth	5	-2.2%	4	9.3%	5	27	-1.7%	27	9.3%	29	45	-3.2%	44	11.0%	49
Leicester	12	-8.2%	11	12.3%	13	72	-7.1%	67	11.1%	75	121	-7.8%	112	11.7%	125
Lichfield	5	-6.6%	5	0.0%	5	30	-6.2%	28	0.7%	29	51	-6.4%	47	-0.9%	47
Lincoln	7	-5.0%	7	9.3%	7	42	-5.6%	40	10.0%	44	71	-5.0%	67	8.0%	72
Malvern Hills	3	3.8%	3	-2.8%	3	17	3.9%	17	-3.3%	17	28	3.3%	29	-3.3%	28
Mansfield	3	14.9%	4	-2.3%	4	20	12.1%	22	-1.0%	22	32	14.8%	37	-2.6%	36
Melton	2	11.0%	2	-3.7%	2	14	10.9%	15	-3.9%	14	22	10.9%	25	-4.4%	24
Newark and Sherwood	3	8.9%	4	15.6%	4	21	8.0%	23	14.3%	26	35	8.4%	37	15.9%	43
Newcastle-under-Lyme	4	0.7%	4	7.9%	5	25	2.0%	25	5.7%	27	42	1.1%	42	6.9%	45
North East Derbyshire	3	1.1%	3	0.5%	3	16	1.7%	16	1.4%	16	26	2.4%	27	0.8%	27

Table 15b: Local Authorities Companies by Size from 2017/18 to 2019/20

Local Authority	# Start-up					# Micro					# SMEs				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
North East Lincs	7	-0.5%	7	8.3%	7	42	-1.5%	41	9.4%	45	69	0.1%	69	7.6%	74
North Kesteven	4	10.3%	4	8.1%	4	21	10.3%	23	7.6%	25	35	10.8%	39	6.9%	42
North Lincs	7	3.9%	7	9.6%	8	43	3.8%	45	9.2%	49	71	4.4%	74	9.4%	81
North Warwickshire	6	10.0%	7	11.9%	8	39	9.9%	43	12.1%	48	65	10.8%	72	10.8%	80
North West Leicestershire	8	15.2%	9	2.0%	10	49	15.0%	57	2.2%	58	82	14.6%	94	1.3%	95
Nottingham City	15	7.7%	16	2.8%	17	91	6.0%	97	1.8%	98	151	6.9%	161	3.3%	167
Nuneaton & Bedworth	5	22.6%	6	10.9%	6	29	22.2%	35	11.5%	39	48	23.2%	59	10.1%	65
Oadby & Wigston	1	-0.4%	1	10.8%	2	8	0.5%	8	10.4%	9	14	0.8%	14	10.7%	15
Reddich	6	24.4%	7	22.3%	9	34	24.1%	43	22.0%	52	58	22.8%	71	22.6%	87
Rugby	6	-8.3%	6	-2.2%	6	39	-8.6%	35	-1.6%	35	64	-8.2%	59	-2.6%	57
Rushcliffe	5	5.3%	5	5.2%	6	31	5.1%	32	6.0%	34	51	5.1%	54	4.2%	56
Rutland	1	-4.5%	1	7.2%	1	8	-3.8%	7	6.6%	8	13	-3.5%	12	7.9%	13
Sandwell	11	15.9%	13	10.8%	14	66	16.3%	77	10.2%	85	110	16.1%	128	10.0%	141
Shropshire	12	10.6%	13	-4.0%	13	70	11.7%	79	-3.2%	76	119	10.7%	132	-4.3%	126
Solihull	19	8.4%	21	8.9%	23	117	9.4%	128	8.1%	138	193	9.6%	212	8.8%	230
South Derbyshire	3	-5.4%	3	-2.8%	3	20	-6.1%	19	-3.0%	19	33	-3.3%	32	-4.3%	31
South Holland	5	12.8%	6	4.7%	6	30	13.9%	34	3.8%	35	50	14.5%	57	2.8%	59
South Kesteven	5	7.5%	5	10.9%	6	29	7.0%	31	11.0%	34	48	7.3%	51	9.5%	56
South Staffordshire	3	10.1%	3	4.2%	3	18	9.9%	19	4.1%	20	29	10.3%	32	4.1%	34
Stafford	5	2.7%	5	19.9%	6	31	0.9%	31	21.2%	37	51	2.6%	52	19.3%	62
Staffordshire Moorlands	2	9.6%	3	17.4%	3	14	10.6%	16	18.1%	19	24	8.3%	26	18.3%	31
Stoke-on-Trent	10	7.2%	11	0.3%	11	59	7.4%	63	0.0%	63	98	6.8%	105	0.3%	105
Stratford-on-Avon	12	-1.4%	12	-6.6%	11	70	0.4%	70	-6.9%	66	118	-0.5%	118	-7.6%	109
Tamworth	3	15.0%	3	24.4%	4	16	15.2%	18	24.2%	23	27	14.5%	31	24.8%	38
Telford & Wrekin	12	12.1%	13	10.8%	15	73	11.0%	81	9.3%	88	120	11.0%	134	10.6%	148
Walsall	7	12.3%	8	15.8%	10	44	13.0%	50	15.6%	58	74	12.2%	83	15.4%	96
Warwick	11	15.4%	13	-1.3%	13	67	15.4%	78	-2.2%	76	111	15.8%	128	-1.0%	127
West Lindsey	3	-5.0%	3	15.5%	3	18	-3.8%	18	14.8%	20	30	-4.2%	29	14.8%	34
Wolverhampton	8	0.7%	9	3.4%	9	51	-0.2%	51	3.8%	53	84	1.3%	85	1.9%	87
Worcester	5	-0.9%	5	5.1%	6	32	-0.1%	32	5.8%	34	54	0.3%	54	4.6%	57
Wychavon	8	9.2%	9	13.2%	10	47	10.3%	52	11.7%	58	79	9.7%	86	13.6%	98
Wyre Forest	2	11.3%	3	-1.8%	3	15	11.5%	16	-1.0%	16	25	11.6%	27	-1.2%	27
Total	480	3.5%	497	7.0%	532	2,868	3.6%	2,971	6.9%	3,175	4,771	3.7%	4,946	6.9%	5,289

Table 15c: Local Authorities Companies by Size from 2017/18 to 2019/20

Local Authority	# Large					# Corporations					Total # Companies				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
Amber Valley	9	6.0%	10	7.9%	11	5	6.0%	5	8.9%	5	94	5.3%	99	8.3%	108
Ashfield	9	-2.7%	8	8.8%	9	4	-2.4%	4	10.3%	5	85	-2.9%	83	10.1%	91
Bassetlaw	7	5.8%	8	10.6%	9	4	5.3%	4	10.2%	4	74	5.4%	78	10.4%	86
Birmingham	145	2.0%	148	13.9%	169	73	-1.0%	72	16.8%	85	1,458	0.6%	1,468	15.0%	1,688
Blaby	20	0.4%	20	2.8%	21	10	-0.2%	10	2.9%	11	204	0.2%	204	3.2%	211
Bolsover	6	3.2%	6	10.4%	7	3	2.5%	3	10.1%	3	62	3.0%	64	9.0%	69
Boston	7	-5.5%	7	3.5%	7	4	-5.7%	3	4.0%	4	72	-5.6%	68	4.4%	72
Bromsgrove	11	-6.4%	10	7.0%	11	6	-6.6%	5	7.0%	6	111	-6.0%	105	6.0%	111
Broxtowe	9	-0.9%	9	0.2%	9	4	-1.0%	4	0.1%	4	88	-1.2%	87	0.8%	88
Cannock Chase	8	6.3%	8	-0.8%	8	4	7.2%	4	-0.5%	4	79	6.0%	84	0.0%	84
Charnwood	15	-4.1%	14	-5.8%	13	7	-3.7%	7	-6.6%	7	147	-4.3%	141	-6.3%	132
Chesterfield	9	-0.3%	9	8.4%	10	4	0.1%	4	8.3%	5	88	-0.2%	88	8.8%	96
Coventry	32	1.5%	32	-3.6%	31	16	1.5%	16	-3.3%	16	319	1.0%	322	-3.0%	312
Derby City	37	-2.3%	36	0.5%	36	18	-4.0%	17	0.1%	17	366	-3.8%	353	0.6%	355
Derbyshire Dales	7	1.4%	7	-2.8%	7	3	1.9%	3	-3.1%	3	68	1.3%	69	-2.7%	67
Dudley	27	-0.2%	27	10.2%	30	13	0.4%	14	9.9%	15	268	-0.2%	268	10.8%	297
East Lindsey	7	0.2%	7	4.8%	7	4	0.4%	4	4.3%	4	71	0.0%	71	5.0%	74
East Staffordshire	10	8.9%	11	13.3%	12	5	10.1%	5	12.1%	6	100	8.8%	109	12.7%	122
Erewash	6	7.6%	7	-1.4%	7	3	6.4%	3	-0.5%	3	62	6.6%	66	-0.4%	66
Gedling	9	-4.9%	8	8.2%	9	4	-3.4%	4	7.6%	5	87	-4.8%	83	8.3%	90
Harborough	6	3.9%	6	-1.7%	6	3	2.6%	3	-1.1%	3	62	4.6%	65	-2.4%	63
Herefordshire	17	-3.6%	17	8.9%	18	9	-4.4%	8	10.1%	9	175	-3.9%	169	9.1%	184
High Peak	6	-3.9%	6	6.9%	6	3	-3.4%	3	5.4%	3	62	-3.9%	60	6.1%	64
Hinkley & Bosworth	9	-2.8%	9	10.8%	10	5	-2.9%	4	10.8%	5	90	-2.6%	88	10.4%	97
Leicester	24	-7.3%	22	10.7%	25	12	-7.9%	11	11.4%	12	242	-7.6%	224	11.4%	250
Lichfield	10	-6.2%	9	-0.2%	9	5	-5.5%	5	-1.2%	5	101	-6.3%	95	-0.3%	94
Lincoln	14	-4.9%	13	9.6%	15	7	-5.4%	7	8.7%	7	141	-5.2%	134	8.8%	145
Malvern Hills	6	4.6%	6	-3.9%	6	3	3.5%	3	-3.3%	3	56	3.7%	58	-3.3%	56
Mansfield	7	14.0%	7	-2.2%	7	3	14.2%	4	-3.6%	4	65	13.9%	74	-2.1%	73
Melton	5	9.8%	5	-4.9%	5	2	10.1%	2	-3.8%	2	45	10.8%	50	-4.3%	48
Newark and Sherwood	7	8.7%	8	15.1%	9	3	8.5%	4	15.0%	4	69	8.4%	75	15.3%	87
Newcastle-under-Lyme	8	2.0%	9	5.8%	9	4	1.9%	4	7.2%	5	83	1.5%	85	6.5%	90
North East Derbyshire	5	1.6%	5	1.4%	5	3	2.3%	3	0.9%	3	52	2.0%	53	1.0%	54

Table 15d: Local Authorities Companies by Size from 2017/18 to 2019/20

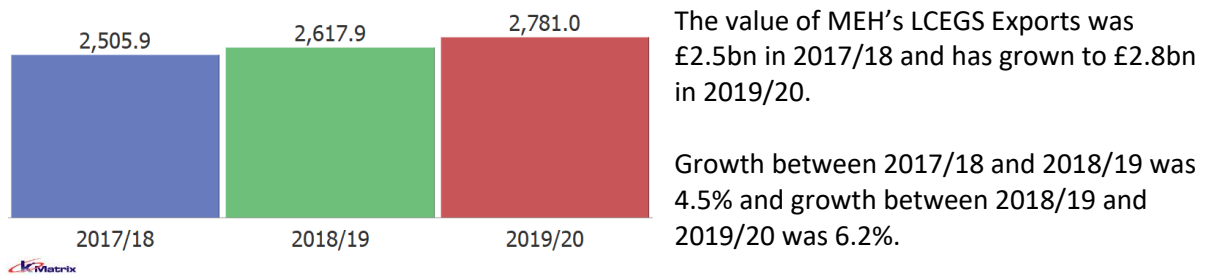
Local Authority	# Large					# Corporations					Total # Companies				
	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20	2017/18	Growth %	2018/19	Growth %	2019/20
North East Lincs	14	-1.7%	14	8.7%	15	7	-1.3%	7	8.6%	7	139	-0.7%	138	8.3%	149
North Kesteven	7	9.0%	8	8.6%	8	4	10.1%	4	7.6%	4	70	10.4%	78	7.4%	83
North Lincs	14	5.0%	15	8.4%	16	7	4.4%	7	9.1%	8	142	4.3%	149	9.3%	162
North Warwickshire	13	10.3%	14	12.0%	16	6	10.8%	7	11.9%	8	130	10.4%	144	11.4%	160
North West Leicestershire	16	14.6%	19	2.1%	19	8	14.6%	9	2.1%	10	164	14.7%	188	1.7%	191
Nottingham City	30	7.4%	32	2.5%	33	15	7.0%	16	2.4%	17	302	6.7%	323	2.7%	331
Nuneaton & Bedworth	9	22.4%	12	11.5%	13	5	22.2%	6	10.7%	6	95	22.8%	117	10.7%	129
Oadby & Wigston	3	0.7%	3	10.7%	3	1	1.1%	1	10.5%	2	27	0.6%	27	10.6%	30
Reddich	11	23.8%	14	22.3%	17	6	23.9%	7	23.6%	9	115	23.4%	142	22.4%	174
Rugby	13	-8.9%	12	-4.1%	11	6	-8.8%	6	-2.0%	6	129	-8.4%	118	-2.4%	115
Rushcliffe	10	4.5%	11	6.2%	11	5	4.8%	5	4.8%	6	102	5.0%	107	5.0%	113
Rutland	3	-3.9%	2	6.5%	3	1	-3.7%	1	6.9%	1	25	-3.7%	24	7.3%	26
Sandwell	22	16.1%	26	10.8%	28	11	16.3%	13	10.7%	14	220	16.2%	256	10.2%	282
Shropshire	24	11.8%	26	-3.7%	26	12	11.3%	13	-4.0%	13	237	11.1%	264	-3.9%	253
Solihull	39	9.7%	43	8.1%	46	19	9.7%	21	9.1%	23	388	9.5%	425	8.5%	461
South Derbyshire	7	-6.3%	6	-3.2%	6	3	-4.6%	3	-2.3%	3	68	-4.6%	64	-3.6%	62
South Holland	10	15.0%	11	3.6%	12	5	14.8%	6	2.8%	6	99	14.3%	114	3.3%	117
South Kesteven	10	6.2%	10	10.6%	11	5	7.8%	5	9.8%	6	96	7.2%	103	10.1%	113
South Staffordshire	6	10.5%	6	3.9%	7	3	9.4%	3	4.5%	3	59	10.1%	65	4.1%	67
Stafford	10	2.1%	10	20.1%	12	5	2.3%	5	20.7%	6	102	2.0%	104	20.0%	124
Staffordshire Moorlands	5	9.6%	5	17.7%	6	2	8.8%	3	18.9%	3	48	9.2%	53	18.2%	62
Stoke-on-Trent	20	7.1%	21	-0.2%	21	10	7.8%	11	-0.3%	11	196	7.1%	210	0.1%	211
Stratford-on-Avon	24	-0.5%	23	-7.5%	22	12	-0.5%	12	-6.3%	11	236	-0.3%	235	-7.3%	218
Tamworth	5	14.8%	6	26.0%	8	3	14.0%	3	24.0%	4	53	14.7%	61	24.7%	76
Telford & Wrekin	24	11.6%	27	9.4%	30	12	11.1%	13	10.7%	15	241	11.1%	268	10.1%	295
Walsall	15	12.4%	17	15.0%	19	7	12.9%	8	17.1%	10	148	12.5%	167	15.5%	193
Warwick	22	15.5%	26	-0.5%	26	11	16.7%	13	-1.0%	13	223	15.6%	258	-1.3%	254
West Lindsey	6	-3.3%	6	15.6%	7	3	-4.5%	3	15.7%	3	61	-4.1%	58	14.9%	67
Wolverhampton	17	0.7%	17	3.1%	18	8	1.1%	9	2.8%	9	169	0.7%	170	2.7%	175
Worcester	11	0.2%	11	5.0%	11	5	-0.2%	5	5.8%	6	108	0.1%	108	5.1%	114
Wychavon	16	9.3%	17	12.2%	19	8	9.8%	9	12.6%	10	157	9.8%	172	12.8%	194
Wyre Forest	5	12.9%	6	-2.1%	5	2	12.1%	3	-1.9%	3	49	11.7%	55	-1.3%	54
Total	954	4.0%	993	6.7%	1,059	476	3.5%	493	7.2%	529	9,551	3.7%	9,900	6.9%	10,581

3. MEH's LCEGS and International Trade

3.1 MEH's LCEGS Imports and Exports

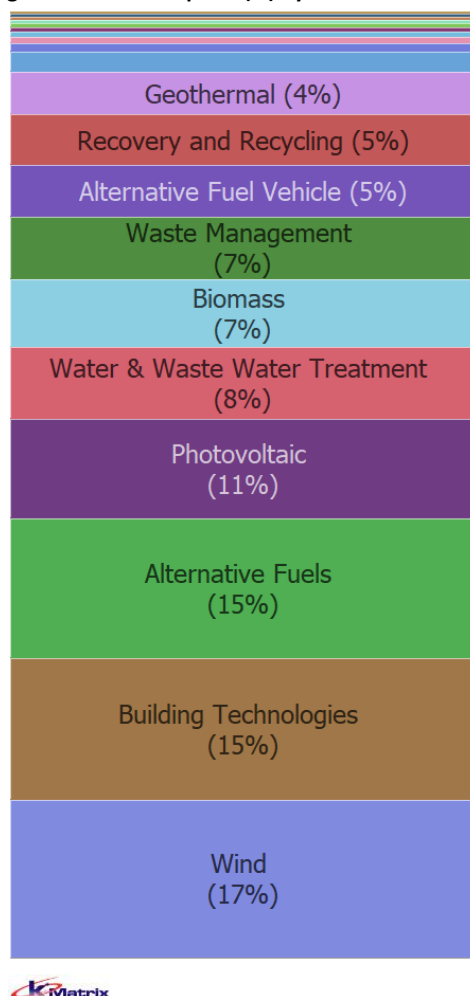
This section of the report addresses MEH's LCEGS International trade over the past three years when compared with UK totals and then identifies leading LCEGS export products and services and their destination markets.

Figure 47: MEHs Exports (£m) 2015/16 to 2017/18



This is compared with UK growth of approximately 8.7% and 9.5% respectively.

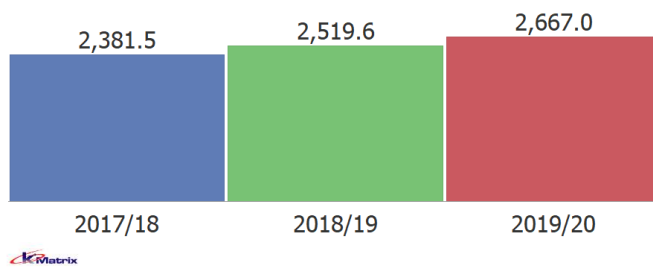
Figure 48: MEH's Exports (%) by Sub-Sector 2019/20



MEH represented 18% of all UK LCEGS exports in 2019/20. This is higher than MEH's 12% of overall UK Sales. This means that the MEH region has a larger share of the export market than the UK domestic market.

Figure 48 shows the proportion of MEH LCEGS exports by Level 2 sub-sector, with Wind (17%), Building Technologies (15%), Alternative Fuels (15%), Photovoltaic (11%) and Water & Waste Water Treatment (8%) being the leading sub-sectors and accounting for 66% of all MEH LCEGS exports.

Figure 49: MEH's Imports (£m) 2015/16 to 2017/18

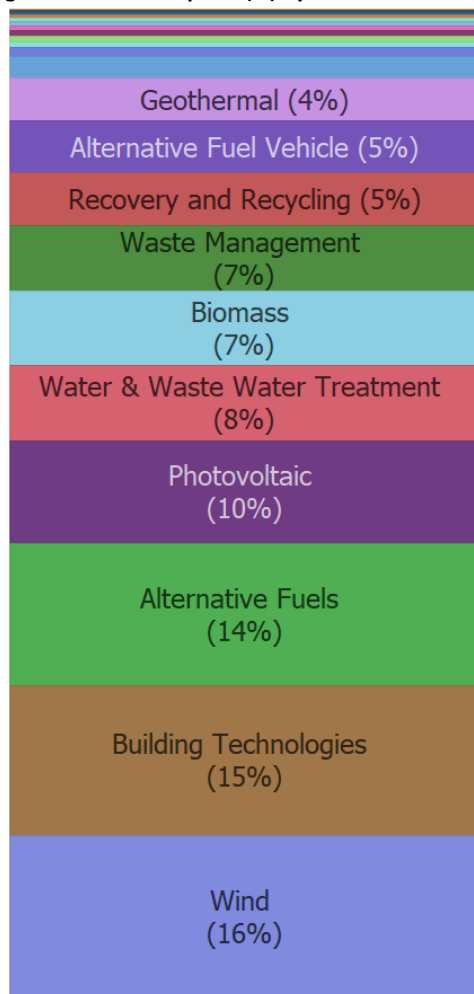


The value of MEH's LCEGS Imports was £2.4bn in 2017/18 and has grown to £2.7bn in 2019/20.

Growth between 2017/18 and 2018/19 was 5.8% and growth between 2018/19 and 2019/20 was 5.9%.

This is compared with UK growth of approximately 10.0% and 7.4% respectively.

Figure 50: MEH's Imports (%) by Sub-Sector 2019/20



MEH represented 9.6% of all UK LCEGS exports in 2019/20. This is higher than MEH's 12.1% of overall UK Sales. This means that the MEH region has a smaller share of the import market than the UK domestic market.

Figure 50 shows the proportion of MEH LCEGS imports by Level 2 sub-sector, with Wind (16%), Building Technologies (15%), Alternative Fuels (14%), Photovoltaic (10%) and Water & Waste Water Treatment (8%) being the leading sub-sectors and accounting for 63% of all MEH LCEGS imports.

In Table 16 MEH's LCEGS exports are shown by sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall sales. The overall average for 2019/20 is 10.5%, with less than 1.0 percentage point variation between sub-sectors, which is consistent across the three years, indicating a stable and established export market.

Table 16: MEH's LCEGS Exports as a % of Sales 2017/18 to 2019/20

Level 1	Level 2	2017/18			2018/19			2019/20		
		Sales £m	Exports £m	Exports as a % of Sales	Sales £m	Exports £m	Exports as a % of Sales	Sales £m	Exports £m	Exports as a % of Sales
Environmental	Air Pollution	128.6	13.6	10.6%	135.2	14.1	10.4%	143.2	15.0	10.5%
Environmental	Contaminated Land	128.6	13.3	10.4%	135.3	14.1	10.4%	143.3	15.2	10.6%
Environmental	Environmental Consultancy	161.6	17.2	10.6%	170.0	17.9	10.5%	179.9	19.0	10.5%
Environmental	Environmental Monitoring	34.2	3.6	10.4%	35.9	3.8	10.6%	38.0	4.0	10.5%
Environmental	Marine Pollution Control	24.9	2.6	10.4%	26.2	2.7	10.4%	27.7	2.9	10.4%
Environmental	Noise & Vibration Control	71.4	7.5	10.6%	75.1	7.8	10.4%	79.5	8.3	10.5%
Environmental	Recovery and Recycling	1,305.3	138.7	10.6%	1,372.6	144.3	10.5%	1,452.5	150.9	10.4%
Environmental	Waste Management	1,591.1	171.2	10.8%	1,672.7	173.9	10.4%	1,769.7	183.9	10.4%
Environmental	Water & Waste Water Treatment	1,810.1	188.8	10.4%	1,903.7	201.2	10.6%	2,014.9	210.3	10.4%
Low Carbon	Additional Energy Sources	210.8	22.1	10.5%	221.8	22.9	10.3%	234.7	24.5	10.4%
Low Carbon	Alternative Fuel Vehicle	1,322.0	135.6	10.3%	1,390.6	142.7	10.3%	1,472.3	151.9	10.3%
Low Carbon	Alternative Fuels	3,377.5	361.0	10.7%	3,552.2	374.8	10.5%	3,761.4	408.4	10.9%
Low Carbon	Building Technologies	3,583.6	381.7	10.7%	3,771.6	389.8	10.3%	3,995.6	418.0	10.5%
Low Carbon	Carbon Capture & Storage	81.1	8.5	10.4%	85.3	8.9	10.4%	90.3	9.4	10.4%
Low Carbon	Carbon Finance	113.7	0.0	0.0%	122.8	0.0	0.0%	133.9	0.0	0.0%
Low Carbon	Energy Management	502.5	51.9	10.3%	528.6	55.3	10.5%	559.7	57.6	10.3%
Low Carbon	Nuclear Power	4.2	0.0	0.0%	4.8	0.0	0.0%	5.4	0.0	0.0%
Renewable Energy	Biomass	1,746.4	184.8	10.6%	1,836.2	193.8	10.6%	1,943.2	200.0	10.3%
Renewable Energy	Geothermal	1,045.0	109.5	10.5%	1,098.9	116.8	10.6%	1,163.0	123.7	10.6%
Renewable Energy	Hydro	67.0	7.1	10.6%	70.4	7.5	10.6%	74.4	7.8	10.5%
Renewable Energy	Photovoltaic	2,491.0	263.1	10.6%	2,619.9	279.5	10.7%	2,773.4	294.1	10.6%
Renewable Energy	Renewable Consultancy	110.4	11.8	10.7%	116.1	12.3	10.6%	122.8	12.7	10.4%
Renewable Energy	Wave & Tidal	3.7	0.4	10.3%	3.9	0.4	10.4%	4.1	0.4	10.5%
Renewable Energy	Wind	3,930.4	411.9	10.5%	4,132.7	433.5	10.5%	4,373.1	463.1	10.6%
Total		23,845.2	2,505.9	10.5%	25,082.2	2,617.9	10.4%	26,556.2	2,781.0	10.5%

In Table 17 MEH's LCEGS available exports are shown by sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall exports. The overall average for 2019/20 is 24.5%, with subtle variation between sub-sectors.

Table 17: MEH's LCEGS Available Exports and Available Exports as a % of Exports 2017/18 to 2019/20

Level 1	Level 2	2017/18			2018/19			2019/20		
		Exports £m	Available Exports £m	Available Exports as a % of Exports	Exports £m	Available Exports £m	Available Exports as a % of Exports	Exports £m	Available Exports £m	Available Exports as a % of Exports
Environmental	Air Pollution	13.6	3.4	24.8%	14.1	3.4	24.4%	15.0	3.6	24.4%
Environmental	Contaminated Land	13.3	3.3	24.4%	14.1	3.5	24.6%	15.2	3.7	24.4%
Environmental	Environmental Consultancy	17.2	4.2	24.6%	17.9	4.4	24.7%	19.0	4.7	24.8%
Environmental	Environmental Monitoring	3.6	0.9	24.2%	3.8	0.9	24.0%	4.0	1.0	24.7%
Environmental	Marine Pollution Control	2.6	0.6	24.6%	2.7	0.7	24.8%	2.9	0.7	24.9%
Environmental	Noise & Vibration Control	7.5	1.9	24.6%	7.8	1.9	23.8%	8.3	2.0	23.9%
Environmental	Recovery and Recycling	138.7	33.9	24.5%	144.3	35.2	24.4%	150.9	36.6	24.3%
Environmental	Waste Management	171.2	43.0	25.1%	173.9	43.2	24.9%	183.9	44.9	24.4%
Environmental	Water & Waste Water Treatment	188.8	45.9	24.3%	201.2	48.5	24.1%	210.3	51.8	24.6%
Low Carbon	Additional Energy Sources	22.1	5.4	24.5%	22.9	5.6	24.5%	24.5	5.9	24.2%
Low Carbon	Alternative Fuel Vehicle	135.6	33.4	24.6%	142.7	35.8	25.1%	151.9	36.5	24.0%
Low Carbon	Alternative Fuels	361.0	89.9	24.9%	374.8	86.8	23.2%	408.4	100.1	24.5%
Low Carbon	Building Technologies	381.7	91.1	23.9%	389.8	97.6	25.1%	418.0	104.1	24.9%
Low Carbon	Carbon Capture & Storage	8.5	2.1	24.6%	8.9	2.2	24.2%	9.4	2.3	24.9%
Low Carbon	Carbon Finance	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Low Carbon	Energy Management	51.9	12.7	24.5%	55.3	13.3	24.1%	57.6	13.9	24.2%
Low Carbon	Nuclear Power	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Renewable Energy	Biomass	184.8	46.2	25.0%	193.8	48.4	25.0%	200.0	49.0	24.5%
Renewable Energy	Geothermal	109.5	27.2	24.8%	116.8	28.7	24.6%	123.7	30.9	25.0%
Renewable Energy	Hydro	7.1	1.7	24.3%	7.5	1.8	24.7%	7.8	1.9	23.7%
Renewable Energy	Photovoltaic	263.1	64.2	24.4%	279.5	68.3	24.4%	294.1	72.1	24.5%
Renewable Energy	Renewable Consultancy	11.8	2.9	24.4%	12.3	3.0	24.7%	12.7	3.1	24.5%
Renewable Energy	Wave & Tidal	0.4	0.1	24.8%	0.4	0.1	24.7%	0.4	0.1	24.1%
Renewable Energy	Wind	411.9	101.5	24.6%	433.5	104.5	24.1%	463.1	111.6	24.1%
Total		2,505.9	615.5	24.6%	2,617.9	637.8	24.4%	2,781.0	680.6	24.5%

The sub-sectors with the highest available export to export ratio in 2019/20 are: Geothermal 25.0%; Building Technologies 24.9%; Marine Pollution Control 24.9%; Carbon Capture and Storage 24.9%; Environmental Consultancy 24.8% and Environmental Monitoring 24.7%.

In Table 18 MEH's LCEGS imports are shown by sub-sector for each of the three years of the report and have been expressed as a percentage of that sub-sector's overall sales. The overall average for 2019/20 is 10.0%, with less than 1.0 percentage point variation between sub-sectors, which is consistent across the three years, indicating a stable and established import market.

Table 18: MEH's LCEGS Imports as a % of Sales 2017/18 to 2019/20

Level 1	Level 2	2017/18			2018/19			2019/20		
		Sales £m	Imports £m	Imports as a % of Sales	Sales £m	Imports £m	Imports as a % of Sales	Sales £m	Imports £m	Imports as a % of Sales
Environmental	Air Pollution	128.6	13.0	10.1%	135.2	13.4	9.9%	143.2	14.2	9.9%
Environmental	Contaminated Land	128.6	13.0	10.1%	135.3	13.4	9.9%	143.3	14.4	10.0%
Environmental	Environmental Consultancy	161.6	16.3	10.1%	170.0	16.7	9.9%	179.9	17.5	9.7%
Environmental	Environmental Monitoring	34.2	3.5	10.2%	35.9	3.7	10.4%	38.0	3.8	10.0%
Environmental	Marine Pollution Control	24.9	2.4	9.6%	26.2	2.6	10.0%	27.7	2.8	10.3%
Environmental	Noise & Vibration Control	71.4	7.2	10.1%	75.1	7.5	10.0%	79.5	8.1	10.2%
Environmental	Recovery and Recycling	1,305.3	130.2	10.0%	1,372.6	134.6	9.8%	1,452.5	144.2	9.9%
Environmental	Waste Management	1,591.1	157.3	9.9%	1,672.7	166.8	10.0%	1,769.7	175.0	9.9%
Environmental	Water & Waste Water Treatment	1,810.1	178.7	9.9%	1,903.7	187.8	9.9%	2,014.9	204.9	10.2%
Low Carbon	Additional Energy Sources	210.8	20.9	9.9%	221.8	22.9	10.3%	234.7	23.4	10.0%
Low Carbon	Alternative Fuel Vehicle	1,322.0	131.9	10.0%	1,390.6	140.7	10.1%	1,472.3	140.0	9.5%
Low Carbon	Alternative Fuels	3,377.5	324.5	9.6%	3,552.2	364.8	10.3%	3,761.4	383.1	10.2%
Low Carbon	Building Technologies	3,583.6	372.3	10.4%	3,771.6	379.5	10.1%	3,995.6	403.8	10.1%
Low Carbon	Carbon Capture & Storage	81.1	8.2	10.1%	85.3	8.6	10.1%	90.3	9.3	10.3%
Low Carbon	Carbon Finance	113.7	12.4	10.9%	122.8	12.4	10.1%	133.9	14.0	10.4%
Low Carbon	Energy Management	502.5	49.1	9.8%	528.6	52.3	9.9%	559.7	56.1	10.0%
Low Carbon	Nuclear Power	4.2	0.4	9.9%	4.8	0.5	9.7%	5.4	0.5	9.6%
Renewable Energy	Biomass	1,746.4	174.1	10.0%	1,836.2	179.9	9.8%	1,943.2	199.9	10.3%
Renewable Energy	Geothermal	1,045.0	106.7	10.2%	1,098.9	112.1	10.2%	1,163.0	116.1	10.0%
Renewable Energy	Hydro	67.0	6.8	10.1%	70.4	7.2	10.2%	74.4	7.2	9.7%
Renewable Energy	Photovoltaic	2,491.0	251.9	10.1%	2,619.9	263.5	10.1%	2,773.4	276.2	10.0%
Renewable Energy	Renewable Consultancy	110.4	10.9	9.9%	116.1	11.9	10.2%	122.8	12.1	9.9%
Renewable Energy	Wave & Tidal	3.7	0.4	9.9%	3.9	0.4	9.7%	4.1	0.4	10.5%
Renewable Energy	Wind	3,930.4	389.2	9.9%	4,132.7	416.5	10.1%	4,373.1	439.7	10.1%
Total		23,845.2	2,381.5	10.0%	25,082.2	2,519.6	10.0%	26,556.2	2,667.0	10.0%

Figure 51 shows the Exports plotted against the MEH's Growth from 2018/19 to 2019/20 for all Level 2 sub-sectors, with the bubbles sized according to the size of the Exports. Here we can see that the Wind sub-sector holds the most desirable position of good Export size and strong Market Growth. Energy Management is one of the top 11 sub-sectors and although has the smallest market of the top 11, it has high growth. Markets that should be considered Export strengths include: Wind, Energy Management, Geothermal, Building Technologies, Biomass and Waste Management.

Figure 51: MEH's LCEGS Exports vs MEH's Level 2 Growth for 2019/20

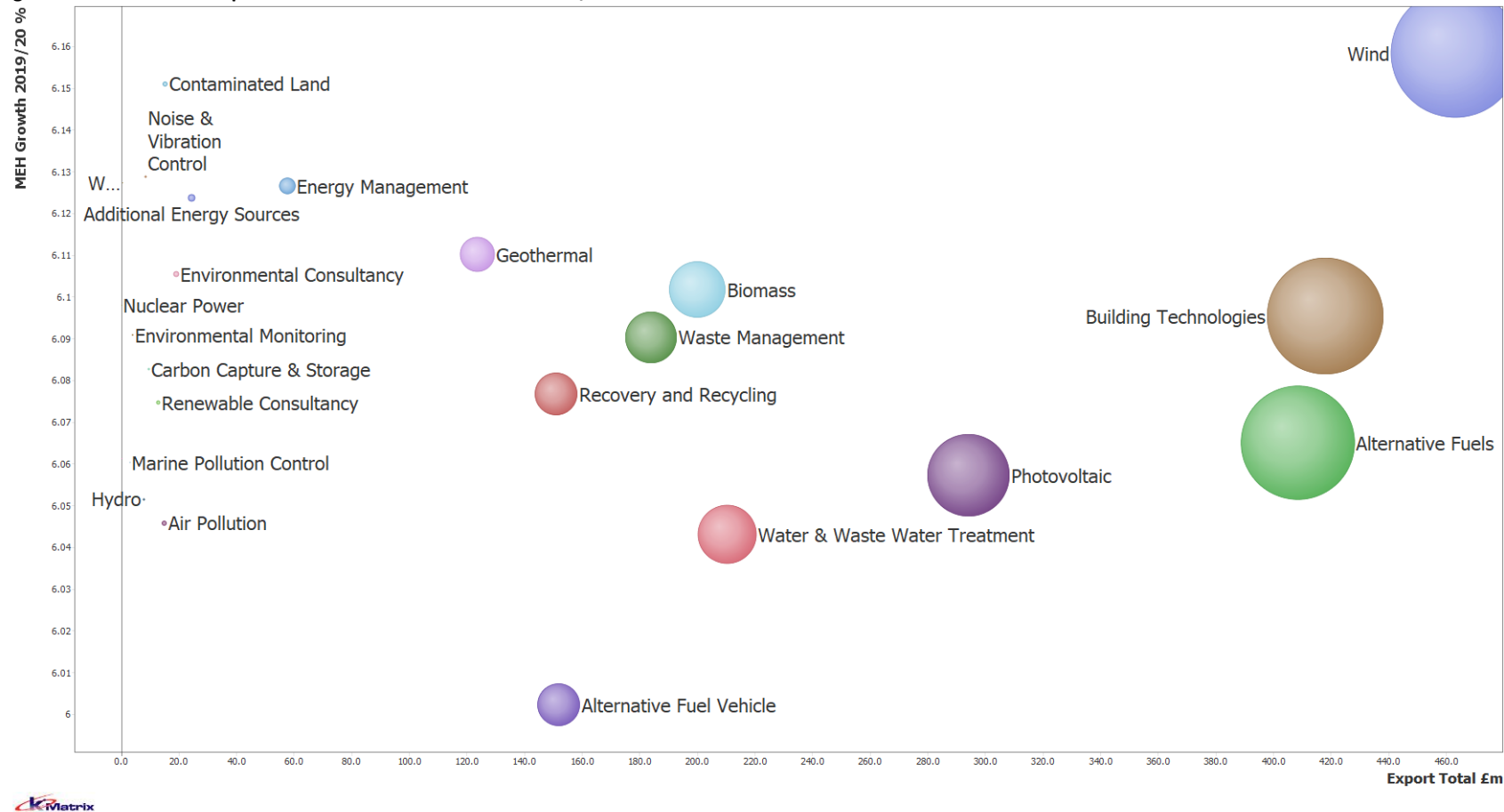
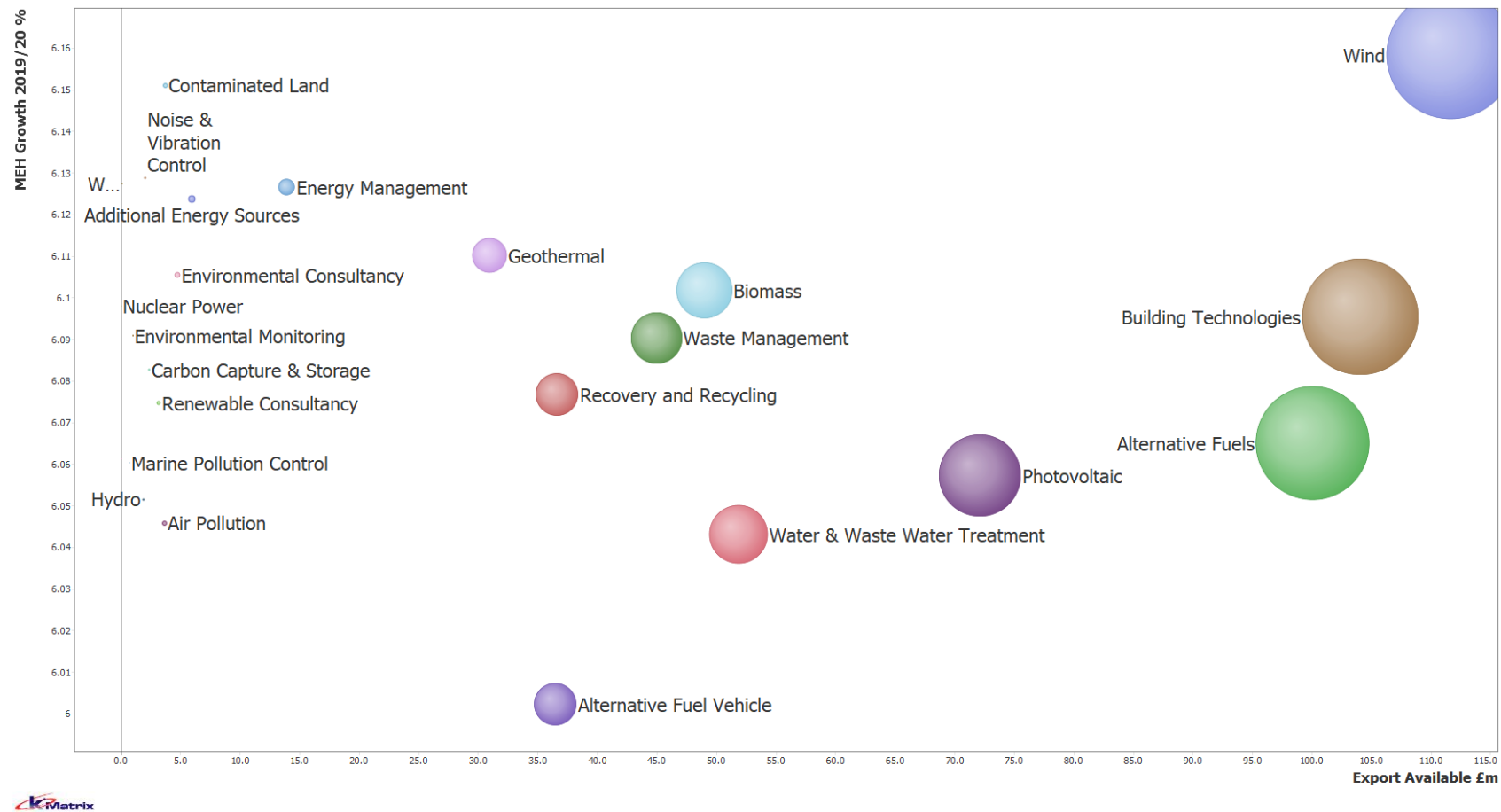


Figure 52 shows the Available Exports plotted against the MEH's Growth from 2018/19 to 2019/20 for all Level 2 sub-sectors, with the bubbles sized according to the size of the Exports. Here we can see that the pattern is slightly different from the Export graph in figure 51, Alternative Fuels has moved very slightly to the right as there is more Export Market Available compared with Wind, this change in pattern is more evident at the LEP-Level, where the markets are smaller and variation in Available market has more effect.

Figure 52: MEH's LCEGS Available Exports vs MEH's Level 2 Growth for 2019/20

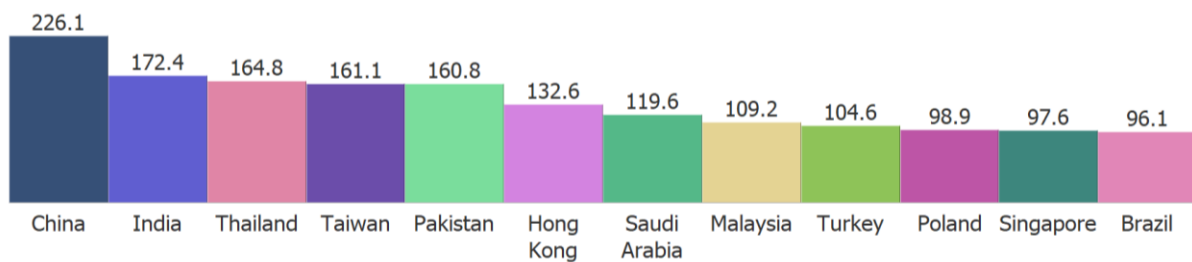


The Top 12 destinations for MEH's LCEGS exports are shown in Figure 53. China is the top destination, followed by India, Thailand, Taiwan, Pakistan, Hong Kong, Saudi Arabia, Malaysia, Turkey, Poland, Singapore and Brazil.

The USA, Germany and France, who are three of the UK's largest trading partners, are conspicuously absent from the Top 12 destinations for LCEGS and this has been a feature of international trade in LCEGS since 2007/08 when the analysis first began.

The LCEGS sector has a very different trading pattern to other mainstream UK sectors, predominantly due to long term, historic trading relationships within this sector.

Figure 53: Top 12 MEH's LCEGS Export Destinations 2019/20



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3.2 MEH's LCEGS Priority Markets

Table 19 combines analysis of MEH's LCEGS product and service exports with destination countries using a heat map. The table shows the value of exports in £m and then colour codes the values – dark green for higher values down to white for lower values. The table has been simplified by excluding the lowest value destination countries and lowest value products/services. The results show the top 32 export destinations and the top 12 (out of 24) sub-sectors.

Table 19: MEH's Level 2 Exports by Country for 2019/20 in £m

Level 1	Level 2	Australia	Brazil	Canada	Chile	China	Denmark	France	Germany	Hong Kong	Hungary	India	Indonesia	Italy	Japan	Malaysia	Mexico
Environmental	Recovery and Recycling	2.03	4.64	3.69	0.53	11.81	2.80	2.42	2.54	6.50	3.42	8.07	2.04	2.34	2.58	5.15	1.22
Environmental	Waste Management	2.63	5.54	4.35	0.59	13.69	3.01	2.68	2.80	7.36	4.22	9.73	2.40	2.91	2.87	6.13	1.50
Environmental	Water & Waste Water Treatment	3.38	7.84	5.90	0.85	16.66	4.60	4.01	4.70	10.44	5.90	13.94	3.46	3.81	4.49	8.76	2.12
Low Carbon	Alternative Fuel Vehicle	3.68	8.40	6.61	0.95	19.52	5.21	4.23	4.72	11.27	6.50	15.30	3.85	4.81	5.01	9.89	2.37
Low Carbon	Alternative Fuels	5.54	15.80	10.84	1.57	29.99	8.41	7.95	7.28	20.86	10.45	27.16	7.00	5.99	7.41	17.71	3.59
Low Carbon	Building Technologies	4.75	10.83	8.92	1.33	29.92	6.99	5.89	6.75	15.72	8.79	20.86	5.25	6.04	6.16	13.19	3.32
Low Carbon	Carbon Finance	1.38	3.23	2.88	0.39	7.50	1.76	1.49	2.05	4.30	2.49	4.40	1.29	1.74	1.37	4.01	0.90
Low Carbon	Energy Management	0.92	2.28	1.73	0.26	5.19	1.29	1.12	1.25	3.10	1.68	4.75	1.01	1.04	1.31	2.46	0.61
Renewable Energy	Biomass	2.12	4.78	3.86	0.55	12.28	2.74	2.66	2.79	7.58	3.90	8.15	2.28	2.33	2.46	5.62	1.25
Renewable Energy	Geothermal	5.39	11.54	8.95	1.39	29.38	6.87	5.56	6.57	16.57	8.77	20.71	5.20	5.36	6.25	12.87	3.25
Renewable Energy	Photovoltaic	3.14	6.40	5.40	0.76	15.87	3.58	3.37	3.58	9.06	5.53	13.26	3.13	3.46	3.79	7.24	1.74
Renewable Energy	Wind	4.03	8.99	7.36	0.95	21.09	4.86	3.94	4.84	12.12	6.75	15.27	3.88	4.30	4.75	9.50	2.44

Level 1	Level 2	Netherlands	Pakistan	Poland	Portugal	Romania	Russia	Saudi Arabia	Singapore	A Africa	S Korea	Sweden	Taiwan	Thailand	Turkey	UAE	US
Environmental	Recovery and Recycling	3.20	8.13	4.90	2.10	3.07	2.41	6.17	5.19	2.44	2.46	1.61	8.20	8.34	5.12	4.33	1.66
Environmental	Waste Management	3.46	9.17	5.57	2.26	3.77	2.61	6.59	5.61	2.62	2.89	1.77	9.50	10.12	5.71	5.23	1.87
Environmental	Water & Waste Water Treatment	5.23	12.72	8.16	3.32	4.73	3.67	9.70	7.42	3.80	4.35	2.46	13.25	13.34	7.86	7.40	2.61
Low Carbon	Alternative Fuel Vehicle	6.20	15.87	7.90	4.00	5.77	4.67	10.70	9.27	3.83	5.00	3.20	11.97	12.63	9.26	8.63	3.08
Low Carbon	Alternative Fuels	9.08	23.02	15.34	5.56	10.02	6.29	18.21	13.16	8.52	9.09	5.34	22.36	26.07	16.36	14.05	4.97
Low Carbon	Building Technologies	7.91	18.51	11.61	5.78	7.38	6.16	15.39	12.30	6.04	6.38	3.78	19.50	18.62	13.07	11.02	4.07
Low Carbon	Carbon Finance	2.02	5.90	3.53	1.60	2.23	1.39	3.75	3.61	1.51	1.90	1.31	4.82	6.16	3.30	2.60	1.17
Low Carbon	Energy Management	1.36	4.17	2.37	1.06	1.47	1.20	2.86	2.32	1.05	1.23	0.78	4.05	3.86	2.47	2.17	0.78
Renewable Energy	Biomass	3.32	7.48	5.40	2.11	3.48	2.50	6.31	5.36	2.89	2.74	1.78	8.83	8.84	5.34	4.53	1.77
Renewable Energy	Geothermal	7.24	19.63	11.63	5.49	7.75	6.10	13.90	12.47	5.51	6.13	3.97	20.78	19.45	12.56	11.00	4.27
Renewable Energy	Photovoltaic	4.55	10.99	7.05	3.32	4.92	3.56	8.49	6.92	3.61	3.92	2.29	12.35	11.58	7.52	6.24	2.32
Renewable Energy	Wind	5.75	15.08	9.30	3.54	5.70	4.68	10.01	8.03	4.45	4.82	2.94	15.35	15.57	9.76	7.62	3.04

Table 19 can be read horizontally to identify the strongest exporting sub-sectors i.e. Alternative Fuels, vertically to identify the strongest trading partners i.e. China, and using both vertical and horizontal you can identify strong niches like Geothermal to Taiwan and Alternative Fuels to India.

Tables 20a, 20b and 20c apply the same conventions as Table 19, but this time broken down to Level 3, which reveals MEH's priority exports in more detail. The tables show the same 32 destination countries but for 30 out of a total of 126 Level 3 market activities.

Table 20a: MEH's Level 3 Exports by Country for 2019/20 in £m

Level 2	Level 3	Australia	Brazil	Canada	Chile	China	Denmark	France	Germany	Hong Kong	Hungary	India
Recovery and Recycling	Consultancy, Training and Education	0.02	0.04	0.03	0.00	0.10	0.02	0.02	0.02	0.06	0.02	0.06
Recovery and Recycling	Glass Stock Processing	0.28	0.72	0.49	0.08	1.76	0.43	0.33	0.30	0.75	0.44	1.14
Recovery and Recycling	Technologies, Research & Development	0.05	0.11	0.11	0.02	0.26	0.07	0.06	0.07	0.19	0.11	0.22
Recovery and Recycling	Waste Collection	0.88	1.90	1.59	0.21	5.03	1.26	1.06	1.15	2.80	1.52	3.35
Waste Management	Construction & Operation of Waste Treatment Facilities	0.79	1.77	1.33	0.19	3.86	0.98	1.03	0.91	2.61	1.25	2.71
Waste Management	Consultancy, Training and Education	0.32	0.72	0.62	0.08	1.76	0.37	0.37	0.40	0.75	0.45	1.46
Waste Management	Equipment For Waste Treatment	0.99	2.12	1.68	0.22	5.17	1.12	0.81	0.91	2.84	1.68	3.53
Waste Management	Technologies, Research & Development	0.52	0.93	0.72	0.10	2.90	0.54	0.47	0.58	1.16	0.83	2.02
Water & Waste Water Treatment	Engineering	0.74	1.41	1.14	0.15	3.56	1.08	0.92	1.01	2.38	1.14	2.73
Water & Waste Water Treatment	Water Treatment and Distribution	2.59	6.32	4.68	0.68	12.84	3.46	3.03	3.63	7.92	4.68	11.00
Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	2.68	6.14	5.15	0.71	14.65	4.08	3.13	3.52	8.14	5.03	11.34
Alternative Fuel Vehicle	Other Fuels and Vehicles	1.00	2.26	1.46	0.25	4.87	1.13	1.10	1.19	3.12	1.47	3.96
Alternative Fuels	Main Stream Bio Fuels	0.93	2.58	2.29	0.31	5.28	1.30	1.26	1.38	3.46	2.32	4.30
Alternative Fuels	Other Bio Fuels	3.85	11.18	7.22	1.05	19.28	6.28	5.92	4.90	14.59	6.96	19.49
Alternative Fuels	Other Fuels	0.41	1.28	0.77	0.13	3.57	0.39	0.41	0.58	1.78	0.60	2.05
Building Technologies	Doors	1.07	2.69	2.32	0.37	8.05	2.15	1.35	1.91	4.40	2.17	5.75
Building Technologies	Insulation and Heat Retention Materials	0.91	1.92	1.71	0.23	4.91	1.15	0.96	1.26	2.50	1.43	3.60
Building Technologies	Monitoring and Control Systems	0.88	1.94	1.31	0.22	4.29	1.18	0.82	1.03	2.81	1.48	3.41
Building Technologies	Windows	1.88	4.28	3.57	0.51	12.68	2.51	2.75	2.56	6.01	3.71	8.10
Energy Management	Technologies, Research & Development	0.08	0.20	0.14	0.02	0.36	0.11	0.08	0.10	0.24	0.12	0.34
Biomass	Biomass Energy Systems	0.83	2.13	1.56	0.25	5.61	1.21	1.23	1.30	3.70	1.75	3.50
Biomass	Biomass Furnace Systems	0.22	0.41	0.35	0.05	1.07	0.24	0.26	0.25	0.65	0.32	0.80
Biomass	Boilers and related Systems	0.71	1.56	1.27	0.16	4.17	0.92	0.83	0.88	2.34	1.26	2.83
Biomass	Manufacturing Of Boilers and Related Systems	0.36	0.69	0.67	0.09	1.41	0.37	0.34	0.36	0.88	0.56	1.01
Geothermal	Manufacture and Supply of Specialist Equipment	1.54	3.57	2.33	0.38	8.43	2.08	1.68	1.72	4.39	2.42	5.22
Geothermal	Suppliers of Systems	1.50	3.15	2.32	0.41	8.57	1.92	1.78	1.82	4.93	2.26	6.30
Geothermal	Whole Systems Manufacture	1.40	3.01	2.75	0.34	7.76	1.72	1.06	1.81	4.62	2.42	5.14
Photovoltaic	Other Related Equipment and Chemicals	0.69	1.35	1.07	0.16	3.66	0.81	0.73	0.89	2.15	1.15	2.85
Photovoltaic	Photovoltaic Cells	0.79	1.27	1.44	0.14	3.08	0.75	0.68	0.88	1.79	1.16	2.71
Photovoltaic	Systems & Equipment	1.54	3.54	2.65	0.43	8.38	1.90	1.85	1.70	4.74	3.04	7.17
Wind	Large Wind Turbine	1.67	4.13	2.77	0.40	8.62	2.01	1.34	1.79	5.27	3.04	6.01
Wind	Small Wind Turbine	0.96	2.10	2.17	0.27	5.28	1.42	1.27	1.46	3.46	1.95	4.51
Wind	Wind Farm Systems	1.40	2.77	2.42	0.28	7.20	1.43	1.32	1.60	3.39	1.75	4.74

At Level 3 greater levels of detail are created that reveal more niche export markets, i.e. Other Bio Fuels to India, Geothermal Large Wind Turbine to Pakistan and Thailand, Alternative Fuels Other Bio Fuels to Taiwan and Water Treatment and Distribution to China.

Table 20b: MEH's Level 3 Exports by Country for 2019/20 in £m

Level 2	Level 3	Indonesia	Italy	Japan	Malaysia	Mexico	Netherlands	Pakistan	Poland	Portugal	Romania	Russia
Recovery and Recycling	Consultancy, Training and Education	0.02	0.02	0.03	0.04	0.01	0.03	0.06	0.04	0.02	0.03	0.02
Recovery and Recycling	Glass Stock Processing	0.25	0.29	0.36	0.62	0.14	0.42	1.24	0.72	0.23	0.35	0.32
Recovery and Recycling	Technologies, Research & Development	0.06	0.07	0.07	0.16	0.04	0.08	0.20	0.15	0.07	0.08	0.07
Recovery and Recycling	Waste Collection	0.91	1.00	1.07	2.18	0.56	1.39	3.46	2.01	0.93	1.24	1.04
Waste Management	Construction & Operation of Waste Treatment Facilities	0.70	0.93	0.86	1.97	0.48	1.18	2.96	1.67	0.74	1.27	0.74
Waste Management	Consultancy, Training and Education	0.38	0.35	0.32	0.83	0.20	0.45	1.24	0.69	0.28	0.45	0.37
Waste Management	Equipment For Waste Treatment	0.91	1.17	1.14	2.24	0.53	1.34	3.29	2.22	0.84	1.48	1.06
Waste Management	Technologies, Research & Development	0.41	0.46	0.56	1.10	0.29	0.49	1.68	0.99	0.40	0.57	0.45
Water & Waste Water Treatment	Engineering	0.72	0.76	0.93	1.68	0.43	0.99	2.87	1.53	0.62	1.00	0.65
Water & Waste Water Treatment	Water Treatment and Distribution	2.70	3.00	3.50	6.96	1.66	4.19	9.67	6.51	2.65	3.65	2.97
Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	2.83	3.88	3.83	7.73	1.80	4.78	12.34	6.05	2.94	4.33	3.54
Alternative Fuel Vehicle	Other Fuels and Vehicles	1.01	0.93	1.18	2.16	0.57	1.43	3.53	1.85	1.06	1.44	1.14
Alternative Fuels	Main Stream Bio Fuels	1.03	1.37	1.47	2.77	0.75	1.59	4.48	2.84	1.12	1.53	0.95
Alternative Fuels	Other Bio Fuels	5.02	3.85	4.97	12.96	2.32	6.38	15.74	10.46	3.65	7.51	4.42
Alternative Fuels	Other Fuels	0.64	0.43	0.55	1.12	0.31	0.63	1.59	1.20	0.43	0.49	0.55
Building Technologies	Doors	1.21	1.38	1.45	3.04	0.89	1.98	5.03	3.03	1.48	2.10	1.63
Building Technologies	Insulation and Heat Retention Materials	0.94	0.99	1.03	2.15	0.54	1.30	3.23	2.12	0.95	1.31	1.02
Building Technologies	Monitoring and Control Systems	0.79	1.06	1.02	2.02	0.54	1.34	3.49	1.93	0.86	1.05	0.90
Building Technologies	Windows	2.31	2.62	2.66	5.99	1.35	3.28	6.76	4.53	2.49	2.92	2.60
Energy Management	Technologies, Research & Development	0.07	0.09	0.10	0.18	0.04	0.09	0.34	0.17	0.07	0.11	0.09
Biomass	Biomass Energy Systems	1.01	1.05	0.99	2.49	0.57	1.45	3.28	2.17	0.94	1.45	1.07
Biomass	Biomass Furnace Systems	0.21	0.24	0.25	0.60	0.11	0.32	0.63	0.41	0.20	0.30	0.20
Biomass	Boilers and related Systems	0.74	0.74	0.84	1.79	0.41	1.01	2.60	1.94	0.68	1.20	0.92
Biomass	Manufacturing Of Boilers and Related Systems	0.31	0.31	0.36	0.73	0.16	0.52	0.96	0.87	0.28	0.52	0.31
Geothermal	Manufacture and Supply of Specialist Equipment	1.53	1.38	1.72	3.49	0.99	2.04	4.84	2.95	1.55	1.95	1.47
Geothermal	Suppliers of Systems	1.45	1.47	1.79	3.88	0.86	1.89	5.98	3.65	1.53	2.21	1.73
Geothermal	Whole Systems Manufacture	1.26	1.39	1.59	3.16	0.86	1.86	5.00	2.89	1.43	2.19	1.70
Photovoltaic	Other Related Equipment and Chemicals	0.66	0.79	0.81	1.45	0.37	1.00	2.63	1.65	0.72	1.05	0.82
Photovoltaic	Photovoltaic Cells	0.69	0.64	0.85	1.80	0.49	1.15	2.13	1.61	0.78	1.30	0.85
Photovoltaic	Systems & Equipment	1.68	1.90	1.99	3.72	0.82	2.25	5.80	3.51	1.72	2.44	1.77
Wind	Large Wind Turbine	1.63	1.71	1.89	3.89	1.05	2.31	6.38	3.62	1.45	2.26	1.98
Wind	Small Wind Turbine	0.97	1.17	1.25	2.76	0.65	1.59	3.90	2.50	1.03	1.55	1.17
Wind	Wind Farm Systems	1.28	1.42	1.62	2.86	0.74	1.85	4.80	3.17	1.05	1.89	1.53

Table 20c: MEH's Level 3 Exports by Country for 2019/20 in £m

Level 2	Level 3	Saudi Arabia	Singapore	South Africa	South Korea	Sweden	Taiwan	Thailand	Turkey	UAE	US
Recovery and Recycling	Consultancy, Training and Education	0.04	0.04	0.02	0.02	0.01	0.06	0.06	0.04	0.04	0.01
Recovery and Recycling	Glass Stock Processing	0.87	0.64	0.32	0.29	0.17	1.28	1.08	0.84	0.53	0.21
Recovery and Recycling	Technologies, Research & Development	0.16	0.16	0.06	0.08	0.04	0.25	0.21	0.13	0.14	0.05
Recovery and Recycling	Waste Collection	2.71	2.34	1.10	1.15	0.71	3.60	3.50	2.06	1.99	0.74
Waste Management	Construction & Operation of Waste Treatment Facilities	2.21	1.82	0.83	0.94	0.57	2.86	3.28	1.90	1.62	0.52
Waste Management	Consultancy, Training and Education	0.84	0.69	0.34	0.33	0.23	1.17	1.24	0.70	0.73	0.30
Waste Management	Equipment For Waste Treatment	2.41	1.95	1.00	1.09	0.67	3.71	3.65	1.92	2.14	0.72
Waste Management	Technologies, Research & Development	1.13	1.14	0.44	0.53	0.30	1.76	1.95	1.19	0.73	0.33
Water & Waste Water Treatment	Engineering	2.03	1.50	0.89	0.94	0.54	2.76	2.98	1.53	1.56	0.48
Water & Waste Water Treatment	Water Treatment and Distribution	7.52	5.82	2.86	3.34	1.89	10.31	10.19	6.22	5.75	2.10
Alternative Fuel Vehicle	Alternative Fuels (main Stream) for Vehicles Only	8.28	7.23	2.81	4.01	2.53	8.42	9.17	7.26	6.69	2.38
Alternative Fuel Vehicle	Other Fuels and Vehicles	2.42	2.04	1.02	0.99	0.67	3.55	3.46	2.00	1.94	0.70
Alternative Fuels	Main Stream Bio Fuels	2.88	2.41	1.42	1.16	0.92	3.89	4.25	2.30	2.41	0.80
Alternative Fuels	Other Bio Fuels	13.23	8.89	6.07	6.97	3.80	15.80	18.76	11.79	9.86	3.41
Alternative Fuels	Other Fuels	1.21	1.11	0.64	0.59	0.36	1.37	1.74	1.47	1.04	0.48
Building Technologies	Doors	4.52	2.98	1.41	1.66	1.07	5.33	5.02	3.47	2.64	0.97
Building Technologies	Insulation and Heat Retention Materials	2.26	1.91	1.05	1.13	0.65	3.47	2.72	2.27	2.05	0.74
Building Technologies	Monitoring and Control Systems	2.39	2.17	1.03	1.05	0.66	3.18	3.21	1.98	1.51	0.72
Building Technologies	Windows	6.21	5.24	2.55	2.54	1.39	7.52	7.67	5.35	4.82	1.64
Energy Management	Technologies, Research & Development	0.21	0.17	0.08	0.10	0.06	0.30	0.28	0.18	0.16	0.07
Biomass	Biomass Energy Systems	3.05	2.29	1.41	1.24	0.86	4.05	4.24	2.01	2.01	0.77
Biomass	Biomass Furnace Systems	0.52	0.41	0.24	0.22	0.15	0.84	0.79	0.47	0.51	0.15
Biomass	Boilers and related Systems	1.95	1.89	0.87	0.86	0.54	2.84	2.81	2.00	1.39	0.60
Biomass	Manufacturing Of Boilers and Related Systems	0.77	0.76	0.37	0.41	0.23	1.09	0.98	0.85	0.60	0.25
Geothermal	Manufacture and Supply of Specialist Equipment	4.45	3.62	1.63	1.66	1.02	5.21	6.07	3.29	2.58	1.30
Geothermal	Suppliers of Systems	3.91	3.68	1.80	1.93	1.18	5.54	5.74	3.28	3.16	1.28
Geothermal	Whole Systems Manufacture	2.81	3.12	1.15	1.48	1.06	6.06	4.01	3.59	3.21	0.96
Photovoltaic	Other Related Equipment and Chemicals	1.86	1.55	0.73	0.85	0.53	2.58	2.62	1.80	1.48	0.53
Photovoltaic	Photovoltaic Cells	1.75	1.66	0.97	0.87	0.54	2.98	2.31	1.47	1.27	0.47
Photovoltaic	Systems & Equipment	4.60	3.49	1.78	2.06	1.13	6.38	6.22	3.98	3.28	1.22
Wind	Large Wind Turbine	4.26	3.06	1.93	1.82	1.15	6.20	6.28	3.89	3.17	1.32
Wind	Small Wind Turbine	2.76	2.19	1.19	1.39	0.84	4.33	4.63	2.74	2.22	0.79
Wind	Wind Farm Systems	2.99	2.78	1.33	1.61	0.95	4.82	4.66	3.13	2.22	0.92

Appendix 1

LCEGS Sector Definition

The **Low Carbon and Environmental Goods and Services** (LCEGS) is divided into three Level 1 sub-sectors - Environmental, Renewable Energy and Low Carbon. These are in turn divided into 24 Level 2 sub-sectors:

- The Environmental sub-sector is made up of the following: Air Pollution Control, Contaminated Land Reclamation & Remediation, Environmental Consultancy, Environmental Monitoring, Marine Pollution Control, Noise & Vibration Control, Recovery & Recycling, Waste Management and Water Supply & Waste Water Treatment.
- The Renewable Energy sub-sector is made up of the following: Biomass, Geothermal, Hydro, Photovoltaic, Renewable Energy Consultancy, Wave & Tidal and Wind.
- The Low Carbon sub-sector is made up of the following: Additional Energy Sources, Alternative Fuels & Vehicles, Alternative Fuels, Building Technologies, Carbon Capture & Storage, Carbon Finance, Energy Management and Nuclear Power.

Environmental activities include 9 Level 2 sub-sectors, divided into 47 Level 3 activity groupings:

- Air Pollution includes indoor and industrial air quality and emissions control.
- Contaminated Land Reclamation/Remediation includes Decommissioning of Nuclear Sites.
- Environmental Consulting includes consulting, training & other services.
- Environmental Monitoring includes analysis, monitoring and instrumentation.
- Marine Pollution and Noise & Vibration Control both include abatement, consulting and R&D.
- Recovery & Recycling includes Waste Collection and various recycling processes
- Waste Management includes Waste Treatment Facilities & Equipment, consulting and R&D
- Water Supply and Waste Water Treatment includes treatment, distribution, consulting and R&D.

Low Carbon includes 8 Level 2 sub-sectors, divided into 49 Level 3 activity groupings:

- Carbon Finance includes Credits Finance, Fund Management, Trading and Research
- Carbon Capture & Storage includes Capture, Pipeline, Storage and Engineering.
- Energy Management includes Lighting, Heating & Ventilation and Engineering.
- Nuclear Power includes Construction, Commissioning, Operations, Engineering and Testing Services.
- Additional Energy Sources include Energy Storage Research, Fuel Cells & Hydrogen.
- Alternative Fuels & Vehicles includes main stream and other vehicle fuels.
- Alternative Fuels includes Main Stream and other Bio Fuels, Batteries and Other Fuels.
- Building Technologies includes Doors, Windows, Monitoring & Control Systems and Insulation/Heat Retention Materials.

Renewable Energy includes 7 Level 2 sub-sectors, divided into 30 Level 3 activity groupings:

- Wind includes Large Turbines, Small Turbines and Wind Farm Systems.
- Wave & Tidal includes Ebb & Flood, Pumps & Equipment, Turbine & Generation etc.
- Photovoltaic includes Systems & Equipment, Cells and Chemicals.
- Hydro includes Turbines, Pumps, Electricity Supply and Dams.
- Geothermal includes Whole Systems, Specialist Equipment, Consulting and R&D.
- Biomass includes Energy, Furnace, Boilers and Related Systems.
- Renewable Energy consulting includes specialist consulting and legal advice.

Further detail on the Level 2 sub-sectors are provided below in their Level 1 groupings:

Environmental

Air Pollution Control sub-sector includes a wide range of manufacturing, operations, consulting and engineering functions that relate to improving and maintaining air quality. It includes:

- Emission Control sensing and monitoring systems and technologies.
- Indoor Air Quality Control (domestic and industrial) through ventilation, cooling and purification systems.
- Dust & Particulate control through installed technologies like filters, towers, scrubbers, cyclones and eliminators.
- Process Engineering for odour control and other cleaner technologies.
- Industrial Emission Control technologies and equipment (manufacture, installation, operations and maintenance).
- Emission Control through manufacture, installation and operation of sampling, control and evaluation systems.

Contaminated Land Reclamation and Remediation sub-sector includes all activities that bring land back into agricultural, industrial, community or commercial use. This includes longer term activities like the decommissioning of nuclear sites.

Remediation and land reclamation include land forming, bunds, geotextiles, storage & containment, oil interceptors, drainage systems, monitoring systems, proprietary treatment processes, sampling & analysis, site investigation, specialist cleaning services, cleaner technology R&D, surface & ground water services, organic waste composting and other services.

Decommissioning includes equipment, consulting, project management, safety critical assessment, pollution control, enviro risk analysis & impact assessment, recycling & compaction, waste collection & containment, waste water treatment, site assessment, excavation, sampling & analysis and monitoring.

Environmental Consulting and Services sub-sector includes consulting, training and management services that are specific to the environmental sector. It includes:

- Specialist consulting - habitat assessment, regulations, compliance and management systems, audits and impact assessment, eco design, eco-investment, climate change modelling, insurance and bio-diversity advice & assessment.

- Manpower and executive recruitment, temporary and permanent recruitment, contracted and interim management services.
- Management services - general consulting, financial, IT, software and marketing services.
- Training and education - publications, online publications, teaching aids, newsletters and courses for waste management, waste water treatment etc.

Environmental Monitoring, Instrumentation and Analysis sub-sector includes activities that measure water, soil and air quality and that support wider pollution control activities in other land, water, marine or air- based environmental sub-sectors. It includes:

- Environmental monitoring- development of cleaner monitoring processes and technologies, vehicle testing, oil spill detection, food testing, nitrate levels, meteorological, water/soil/air quality testing and monitoring.
- Instrumentation equipment & control manufacture, supply, maintenance and development of instrumentation, laboratory equipment and software for environmental/ air/ water/ land/ marine analysis.
- Environmental analysis - laboratory testing, data logging & recording, quality reporting, collection & collation of samples, auto sampling systems, in-field measurement and reporting and R&D in water, soil and emissions analysis.

Marine Pollution Control sub-sector includes responses to pollution hazards at sea and also discharged from land-based sources. It includes the following products and services for deep sea, coastal waters and inland waterways. It includes:

- Marine pollution abatement - manufacture, supply and maintenance of booms, chemical discharge treatment equipment, solid & liquid waste/radioactive containment and treatment equipment and monitoring services, spillage clean-up services, shoreline & shallow water remediation and maintenance services and collection & containment services.
- R&D - cleaner processes and technologies, monitoring systems, oil absorbents, boom and containment systems, water containment and treatment technologies.
- Specialist consulting and training - chemical discharge prevention, education, policy & planning, training, publications, sewerage discharge management, radioactive waste management and solid and liquid waste management.

Noise & Vibration Control sub-sector includes all activities that prevent or control noise and vibration pollution. It includes:

- Noise abatement - manufacture, supply, installation and maintenance of barriers, acoustic management equipment, noise insulation, noise & vibration control and monitoring equipment, acoustic management equipment, noise insulation materials, monitoring services, large plant services and surface modifications.
- R&D - noise attenuation, noise sensing, vibration sensing, vibration control and noise & vibration abatement equipment and cleaner technologies and process by development.
- Consulting and training - consulting, publications, training and noise monitoring services.

Recovery & Recycling sub-sector includes all activities relating to the collection and processing of domestic and industrial waste products. It includes:

- Waste collection - manufacture, supply, installation and operation of equipment and services for collection of household, industrial and hazardous waste, treatment of waste prior to landfill and supply of pre-treated recyclates.

- Engineering & equipment - engineering services and process control for the complete range of recycling stock
- Consulting & training - collection and processing consultancy and training, publishing, legal & insurance advice.
- R&D - metals recovery, pyrolysis, bio-based systems, new recyclable materials, new collection & processing technologies.
- Recycling stock - recovery, recycling, processing, sorting, supply and packaging of rubber, plastics, paper, oil, electrical, electronics, glass, composting, construction & demolition, automotive, wood and textiles stocks.

Waste Management sub-sector includes the treatment/management of domestic and industrial waste that cannot otherwise be recycled. It includes:

- Construction & operation of waste treatment facilities for anaerobic digestion, composting, incineration, landfill, waste to energy conversion and the supporting engineering services.
- Equipment for Waste treatment, manufacture, supply, installation and maintenance of bio filters, bio reactors, collection equipment, grease traps, oil interceptors, materials processing equipment, monitoring & control equipment and nightsoil & landfill leachate treatment.
- R&D - incineration technologies, energy from waste systems, cleaner processing & treatment technologies, disposal of hazardous waste and other materials processing technologies.
- Consultancy and training - books, periodicals & publications, specialist consulting and training for asbestos, hazardous materials and other waste management systems.

Water Supply and Waste Water Treatment sub-sector includes activities relating to the treatment of pollutants in the water supply. It includes:

- Water treatment and distribution, manufacture, supply, installation and maintenance of systems for activated sludge, aerobic & anaerobic treatment, biological odour & corrosion control, demand management & leakage reduction, effluent treatment, filters, microbial treatment, screens, sequencing batch reactors, water disinfection and storm/grey water treatment.
- Engineering - field engineering, pipe & valve maintenance, fitting & construction, fabrication & welding and engineering design.
- R&D - water purification, water management, black/grey water treatment, biocides, bio reactors and aerobic/anaerobic treatment technologies.
- Consulting and training - engineering and water management training, publishing and specialist consulting for water systems treatment, management and engineering.

Renewable Energy

Biomass Energy sub-sector includes all activities that convert biomass into energy but excludes biomass materials (see Alternative Fuels). It includes:

- Biomass furnace systems - manufacture, supply, consulting, design, installation, engineering and other services for domestic, industrial and community applications.
- Biomass energy systems - manufacture, supply, consulting, design, installation, engineering and other services for domestic, industrial and community applications.
- Manufacture of biomass boilers and systems including boilers, cogeneration, heat exchange and packaged power systems for domestic, industrial and community applications.

- Biomass boilers and related systems including supply, consulting, design, engineering, installation and other services for boilers, cogeneration, heat exchange and packaged power systems for domestic, industrial and community applications.
- Technical and operational consulting.

Geothermal Energy sub-sector includes all activities relating to the extraction and use of heat generated from the earth. It includes:

- Manufacture and supply of specialist thermally enhanced equipment - grout, heat pumps, pipes, flow control valves, drilling equipment, installation rigs and ancillary equipment.
- Whole systems manufacture and supply for industrial, residential and community geothermal energy applications.
- Component design and research - design services, component research and component recycling.
- Consulting & related services - architectural, construction, systems design, consulting, engineering, installation and project development services.

Hydroelectric Energy sub-sector includes activities that help to extract energy from river and other water sources held in dams (as opposed to wave or tidal energy) that is used to drive turbines and generators. Large scale civil engineering/construction activities associated with dam building have not been included in this analysis. It includes:

- Turbines - manufacture, supply, installation and maintenance of turbine generators, control systems, spares and structural supports and fittings.
- Dams & structures - manufacture, supply, installation and maintenance of dam operational systems, control systems, maintenance services and sluice gates and actuators.
- Pumping & lubrication - manufacture, supply, installation and maintenance of pumps, spares, storage and lubrication systems and spares.
- Electricity supply - manufacture, supply, installation and maintenance of power factor, power distribution and grid connections and supporting structures.

Nuclear Power sub-sector includes all activities that relate to the generation of nuclear power, excluding decommissioning of nuclear sites. It includes:

- Nuclear safety engineering services, regulatory compliance, reactor management, fail-to-safety engineering.
- Nuclear power plant operations management, engineering and PR.
- Nuclear cooling equipment - manufacture, installation and maintenance.
- Construction of plant and equipment - site development, reactor and buildings and power plant/equipment construction.
- Commissioning engineering services - cooling & thermal control, engineering maintenance, instrumentation, power distribution, reactor & plant commissioning.
- Sampling & testing services - thermal control testing, remote monitoring, back-up plant monitoring and effluent discharge testing.
- Nuclear scientific services - research, laboratory testing and fuel management.

Photovoltaic Energy sub-sector includes all activities that help to convert solar radiation into useable energy. It includes:

- Chemicals - production and supply of solar chemicals and solar pond salt.

- Systems & equipment - manufacture, supply, installation and maintenance of active and batch systems, clerestory windows, light shelves and tubes, solar box cookers, solar combi-systems and solar lighting design.
- R&D - solar power and solar car research.
- Photovoltaic cells - manufacture, supply, installation and maintenance of photovoltaic modules, mounting systems, ancillary components, cells and cell materials.
- Other equipment & chemicals - manufacture, supply, installation and maintenance of glass houses, convection towers, heliostats, parabolic collectors, turbines, trough collectors, towers and solar trackers.

Renewable Energy Consulting sub-sector includes consulting and legal services specific to Renewables i.e. not included in general or specific environmental consulting. It includes:

- Legal services - wind farm location and other renewable energies.
- Consulting - turbines, solar and photovoltaic applications, public sector and corporate Renewables policies, nuclear energy, insulation technologies and alternative fuel technologies.

Wave & Tidal Energy sub-sector includes all activities that help to convert the energy from waves and tides into usable power (also known as marine renewable energy). It includes:

- Turbines & generators - the manufacture, supply, installation and maintenance of tidal turbines, structural supports and fittings, spares and turbine control systems.
- Pumps & equipment - the manufacture, supply, installation and maintenance of pumps and pump spares.
- Two basin schemes - provision of structural engineering and field maintenance services.
- Ebb & flow systems - manufacture, supply, installation and maintenance of ebb and flood generation systems.
- Assessment & Measurement - waves, water levels, turbidity, tidal energy, sediment, salinity pollutants, fish stocks monitoring and local/ global environmental impact assessment.
- Other general services - financial planning, operational and maintenance services.

Wind Energy sub-sector includes all activities that convert wind power into usable energy. This includes wind farm systems, large and small wind turbines. The sub-sector is divided by size of turbine rather than location (onshore and offshore) because it is easier to differentiate and map supply chain activities in this way. It includes:

- Wind farm systems - manufacture, supply, installation, operation and maintenance of integration, power plant, power control, grid entry equipment and systems and electrical and mechanical componentry.
- Small wind turbines - manufacture, supply, installation, operation and maintenance of small turbine systems (blades, towers, fixing structures, cowlings, enclosures, gear boxes and drive trains), componentry and research.
- Large Wind Turbines - manufacture, supply, installation, operation and maintenance of large turbine systems (blades, towers, fixing structures, cowlings, enclosures, gear boxes and drive trains), componentry and research.

Low Carbon

Additional Energy Sources sub-sector groups together R&D, Design and Prototyping activities relating to a range of new Low Carbon energy sources.

These energy sources include: Fuel Cells, Hydraulic Accumulators, Hydrogen, Molten Salt, Thermal Mass, Compressed Air, Superconducting Magnets and more general energy storage research.

This is a small sub-sector (in value and impact) because only energy sources that have a current economic footprint (i.e. trading) are included. This excludes a number of promising energy sources that are still in development and for which economic evidence is not yet available.

Alternative Fuel and Vehicles sub-sector includes Low Carbon Fuel and technology activities that relate to (predominantly) automotive transport. It is divided into Alternative Fuels (main stream) and Other Fuels and Vehicles. This sub-sector does not include bio diesel (see Alternative Fuels). It includes:

- Alternative Fuels includes the production, supply and distribution of Natural Gas (Compressed or Liquefied), Synthetic Fuel and Auto Gas (LPG, LP Gas or Propane).
- Other Fuels and Vehicles includes vehicle technologies and fuel sources that are still at an early stage.
- Research, Design, Development and Prototyping activities are included for: Hydrogen fuel cells and hydrogen internal combustion, Electric, Hybrid Electric, Steam powered, Organic waste fuel, Wood gas, Solar powered and Air, Spring & Wind powered vehicles.

Alternative Fuels sub-sector includes a wide range of Low(er) carbon fuel sources that are not included under Renewable Energy. It includes the manufacture, production, supply and distribution of:

- Batteries - chemicals, chargers, controllers, cables, connectors, containers, suppliers and testing equipment.
- Bio fuels for Vehicles - bio diesel, butanol, ethanol and vegetable oils.
- Mainstream Bio fuel applications (non-transport) - bio diesel, butanol and ethanol.
- Other Bio fuels - biomass, methane, peanut oil, vegetable oil, wood and woodgas.
- Other fuels - Hydrogen.

Building Technologies sub-sector includes main stream building materials and systems that contribute to reduced energy use and to lowering the carbon footprint of buildings. It includes:

- Windows - the manufacture, supply, distribution, installation and development of double glazed, electro chromatic, insulated alloy, honeycomb and triple glazed units.
- Doors - the manufacture, supply, distribution, installation and development of insulated alloy and plastic doors.
- Insulation and heat retention materials - the manufacture, supply, distribution, installation and development of insulation materials, heat retention surfaces & ceramics, electronic control systems and controlled venting and ducting systems.
- Monitoring and control systems - the manufacture, supply, distribution, installation and development of energy and distributed energy control, monitoring, management and analysis systems.

Carbon Capture & Storage sub-sector includes activities that store carbon emissions - from locations like power plants and prevent them entering the atmosphere. It includes manufacturing, supply, distribution, installation, maintenance, development and design of:

- Pre combustion capture systems
- Post combustion capture systems
- Oxy-Fuel combustion systems
- Pipeline systems and services
- Ship storage and discharge systems
- Ocean storage equipment and services
- Mineral storage equipment and services
- Geological storage equipment and services
- Engineering, project management and consulting services.

Carbon Finance sub-sector includes investment activities and financial instruments for emission reduction projects and carbon trading. This includes:

- Carbon credits finance and fund management - land, project or general trading services from finance houses and investment funds.
- Carbon credits trading - development and supply of trading systems, land/project/general trading houses and transactions.
- Carbon market intelligence - carbon markets analysis & reporting and carbon trading by forecasting and reporting from journals, online, data providers or other publishing sources.
- Projects and verification - data collection, verification, legal, project development, capacity development and carbon declaration services.
- Press and journalism - financial press and periodicals, other journals, data providers and online services.

Energy Management sub-sector includes energy saving and power management activities for industrial and domestic use. It includes:

- R&D into high efficiency lighting, heating & ventilation, power, lighting, equipment & pumps and advance management systems.
- Gas Supply - monitoring, meterage, leak detection & maintenance, gas supply control and manufacture of high efficiency consumer equipment and devices.
- Lighting - manufacture, supply, distribution and installation of energy saving light bulbs & tubes, lighting and control systems.
- Heating & Ventilation - manufacture, supply, distribution and installation of energy saving equipment and systems.
- Electrical - manufacture, supply and installation of energy saving power control, building control, power consumption control & monitoring systems.
- Consulting and other services - advice & consultancy, publication, training and design of management systems.

Appendix 2

The kMatrix Methodology

2.1 Introduction

This sector (until 2015) has not been well documented by government statistics, so the methodology works beyond standard industrial and market classifications and looks for multiple sources of industrial-based evidence to quantify market values. kMatrix is unique in how it identifies, assembles, evaluates, monitors and develops rules for the use of those sources to quantify ‘difficult-to-measure’ markets.

Market activities are only included when there are multiple data sources. These sources are screened to remove duplicate references to any single source and then shortlisted by removing outliers and unreliable sources. This shortlist is then screened again until some consistency in value is achieved.

Market values created in this way are then “reality tested” by comparing these values within and across sectors, against known national/regional industrial specialism, across nations, against known trade flows and recognised industry benchmarks.

This methodology is quantitative and data intensive. Its uniqueness resides in the ability to manage and select reliable sources that are specific to each market activity. The data sources are global in nature and derive from government, private sector, institutional, industrial, trade, advertising, HR, financial, investor, academic and other (unpublished) sources. Up to 900 sources are used to compile the national LCEGS data set.

Sources are carefully managed. kMatrix measure and rate their sources’ accuracy and reliability over time and exclude sources that are outdated or without a measurable track record. They use no less than seven qualified sources showing some consistency in results for deriving any values that they print. They create a mean value from these selected values and then assign a confidence level (generally of about 85%) based upon the spread of selected values around the mean

In contrast to most research or consulting reports kMatrix do not identify, copy and then acknowledge single data sources for specific tables or analytical comments. This is impossible for them to do because they multi-source every aspect of their data and then “transform” it into a new value. This makes single source attribution meaningless.

2.2 Measures

Throughout this dataset the focus is on a small number of key measures. To summarise, these are:

- **Sales** – This is the estimate (in £m) of economic activity by identified companies in a defined region within the supply/value chain for market products and services. The estimate is based upon where sales activity takes place rather than where it is reported.
- **Companies** – This is a measure of the total number of companies in a defined region that match, or fit within, the market activity headings.

- **Employment** – This is a measure of the estimated employment numbers across all aspects of the supply/value chain. National, regional and other economic data sources have been used to estimate current employment levels for each area of market activity.
- **Growth** – This is a multi-year measure that includes historical AND forecast growth. The growth measure is derived from live, rapidly changing and multi-sourced data links and is specifically based upon growth in Sales. Growth is generally a measure of increased market opportunity and can be used for trend analysis, comparison across different markets or as a moving indicator of market confidence (growth time series).
- **Exports** – This is a measure of products and services sold overseas and is calculated using in-country/out-of-country data and additional data from the logistics and freight forwarding industry.

2.3 kMatrix's Methodology

The methodology for sector analysis is definition and source-driven. The definition determines WHAT gets measured and the source model determines HOW it gets measured.

All of the data measures are multi-sourced and the process starts by defining the financial value of the sector (based upon our inclusive definition) from a wide variety of sources.

When kMatrix create a sector definition they always check that multiple sources of economic data exist for each included activity. This financial value is checked against existing sector values and also against the value of other economic sectors.

This is an iterative process that continues until they arrive at robust values and comparisons for all activities within the sector (comparative values of Wind vs. Photovoltaic vs. Biomass) that can then be meaningfully compared across global economies (UK vs. US vs. China etc.) and across different sectors (environmental consultancy vs. other specialist consulting activities). It is important that the methodology triangulates economic values in this way so that they:

- a) Can exclude the research bias that often occurs from focusing on a single sector in a single country and
- b) Ensure that they are effectively monitoring a sector that is still evolving by absorbing activities often included in other sectors.

Sales

The key measure that is used for financial value is Sales i.e., the value of sector products and services sold either to other businesses or directly to consumers from the geographically located company base, whether it be national, regional, sub-regional or Local Authority. This means that the analysis only includes activities where there is a measurable economic footprint. It does not include publicly-funded research or pre-commercial consumption of funds, except where those activities result in the purchase of product and services from third parties

As they derive the financial value for the sector they also assemble and assess the UK company base that is contributing to this value. In the first case they identify all “significant” or “specialist” companies, these are companies where LCEGS account for over 80% of company sales, and then the supply/value chain companies where LCEGS sales is an

important and measurable component of their overall sales - (over 20%). These percentages are indicative and vary for different LCEGS activities.

Companies

The company count acts as a further reality check on the financial value of the sector by comparing company turnover values in this and other sectors and also assists in the geographical analysis of where LCEGS value is created. For company counts and company listings we use standard data sources (FAME, Companies House etc), international sources, industry/trade sources, the advertising industry (YELL etc.) and, with caution, company-published information.

One important fact about the methodology is that in a typical SIC approach to sector analysis, a company is counted once and the value of its activities are very often assigned to a single category (which may or may not reflect what a company actually sells now), within a single sector and from a single geographical location.

This approach is to identify and assign value to different activities within a company that may fall within the same sector and to exclude values associated with different sectors. Where possible, they also break the reported activity down within larger multi-site companies so that only the value created within a region/LA is reported for that region/LA.

By analysing a sector in this way, they are able to capture the economic value generated by all “specialist” and supply/value chain companies, without any double counting of value. However, the methodology does mean that a single company may contribute value to multiple activities and we have to be careful not to double-count companies. To avoid this we assign a company, for counting purposes, to the activity that accounts for most of its sector sales. This does mean that on some occasions some of the smaller activities in our analysis may have a financial value in the sales column but a zero in the company column.

Employment

When financial values and company numbers have been calculated the methodology then looks at the employment base for the sector. The analysis of employment includes HR/Recruitment industry data, trade/industry data, government statistics, company reported employment levels and a variety of industry benchmarks that show employee input ratios into different products and processes. They do not survey companies directly for this information.

From these different sources we calculate employment numbers for LCEGS sector activities, taking into account how staff can operate processes that produce products for different markets. We, therefore, measure our employment numbers in Whole Time Equivalents (WTE).

Growth

Sales Growth is both an historical and a forecast measure and the methodology applies the same multi-source rigour to assessing growth that has already occurred as to growth that may occur. Growth forecasting shows the importance of both multi sourcing AND tracking the historical reliability/accuracy of sources used. It is based upon continuous monitoring of forecast “opinions” that are constantly being updated and re-evaluated, as a result “in-year” measurements of predicted growth can vary depending on when the sample is taken and change as sources respond to events like recession.

For this reason, we measure annual growth as a) a value frozen at a point in time and b) a time series (monthly or quarterly) measured throughout the year. In this file we include only the single

(frozen) forecast. Separate files with detailed time series forecasts and trend analysis for the LCEGS sector are available.

Annual growth figures are useful in calculating and comparing the future contribution of sector activities beyond the current baseline. The percentage growth shows the RATE of change, the application of growth rates to the current sales baseline shows the IMPACT of change. Measuring the impact of change in financial terms shows how the ranking and importance of existing activities to the region/local authority may change over time and suggests when and where action may need to be taken to accommodate changes in the employment and company base.

The quoted growth rates in this dataset apply specifically to sales value. A growth in sales is indicative of changes in company numbers/employment but 5% sales growth does not necessarily equate to 5% employment growth. Companies can achieve growth in different ways and the recession has shown that companies will consume any “slack” before creating new jobs.

Geography

The methodology is designed to locate and measure economic activity at various geographical levels. The smallest unit of measurement is the Local Authority, but it can analyse data at county, sub-regional, LEP, regional and UK level.

When the methodology calculates and measures economic activity at the local authority level it takes into account existing local government boundaries, local GDP calculations and demographics, the postcode location of companies in the sector and any other local data that is available and relevant to the sector. When we measure sales and employment, therefore, our numbers are based upon where the business is located, rather than where people live.

There are some limits to what economic measures can be meaningfully or accurately applied at the local level. This is due to the range and specificity of data sources. Most of the economic development measures within this dataset can be accurately represented at a local level. Growth is an exception because rates cannot meaningfully be differentiated at a local level, therefore we apply regional growth rates throughout.

Appendix 3

LCEGS and Office of National Statistics Environmental Goods and Services Sector Comparison

The purpose of this appendix is to provide a brief description of some of the differences between the Office of National Statistics (ONS) Environmental Goods and Services Sector (EGSS) data and the LCEGS data provided by kMatrix. The two methodologies differ in the way data is collected, their methodologies, and in terms of their sector definitions.

kMatrix is a data house that specialises in providing evidential data for business modelling and analysis on a multi-sectoral basis. We provide back room services to the likes of Deloitte and PWC amongst others in the UK, New Zealand, Australia, US and the EU for sectoral analysis and due diligence for sectoral development and investment. We also provide our business and technology profiling services through these channels to market, as well as direct to universities for technology spinouts and individual businesses for development purposes. Further customers include government departments such as BEIS, Home Office and various local and regional government departments.

The ONS EGSS data is produced primarily for the purpose of national accounting. It is sector-specific, using narrow sector definitions and takes no account of the value or supply chains in a sector. In contrast, the kMatrix methodology was originally designed to help companies by measuring technologies or activities using small taxonomies, to assist with investment and developmental planning. This capability was expanded to provide market data for a number of economic sectors, by creating larger taxonomies to capture as much of the market as possible, including the supply and value chains. Each taxonomy for a sector will draw relevant activities from many other sectors, to fully capture all activity. In this way, the LCEGS taxonomy captures activities across multiple sectors and down the value and supply chains. This difference in *what* is being measured is the fundamental reason why the definitions used by ONS and LCEGS do not align.

The kMatrix methodology uses a unique process of ‘triangulation’ to measure metrics such as employment and other characteristics of a sector at varying levels of detail. This process has been developed over 30 years and has been adopted by various governments, universities and major corporates to provide economic industry data for hard to measure sectors. It is similar in concept to the triangulation of satellites to work GPS satellite navigation systems. The methodology uses multiple data points which can be economic or non-economic in origin, from a number of different sources to ‘triangulate’ the value of a product or service in question.

This process is different to the methodology used by the ONS to produce the EGSS data, predominantly because the ONS data relies on self-certification of companies into SIC codes, whereas the kMatrix methodology calculates values based on multiple sources of data. The ONS data is based on where companies choose to classify themselves. kMatrix data looks at the activities of companies and attributes those activities to different sub-sectors. In effect, the ONS system is limited to the ability or willingness of companies to list which sectors their products or services are used in, this method is likely to produce both over and underestimates of market size as companies will attribute more or less of their activities to relevant SIC codes. The kMatrix methodology does not rely on company cooperation but looks at their activities and breaks them down into the levels or sub-sectors they are relevant to.

The kMatrix process operates on a 'bottom up' basis, meaning we look at products and services delivered, rather than company classifications and turnover, which is classed as 'top down' (SIC system). The bottom up process was developed to assist individual companies based on sectoral analysis findings and provide evidential data and advice. By looking at the sector from the bottom up (by each activity, product or service), the sector can be determined in accordance with the relevant sector definition, whilst allowing the flexibility to 'add in' or 'opt out' of various activities depending on the purpose of the reporting. ONS data itself is not used to produce kMatrix figures, but the kMatrix values can be reported out through the ONS classification system if required.

Table 1 shows a comparison between employment analysis for the London region using the SIC classification methodology and the kMatrix methodology for the Manufacturing sector and the Construction sector.

Table 1: Comparison of 2011 - 2016 Employment Data for SIC and kMatrix in London

Methodology	Sector	2011 Jobs	2012 Jobs	2013 Jobs	2014 Jobs	2015 Jobs	2016 Jobs
SIC based	Manufacturing	106,750	108,250	106,750	112,000	108,000	105,250
SIC based	Construction	133,250	150,500	146,500	146,250	145,250	155,750
kMatrix	Manufacturing	137,351	135,943	138,951	141,873	140,308	131,230
kMatrix	Construction	166,629	195,334	177,915	184,022	184,317	199,038
<i>Indexed numbers for the rows above show that growth in the manufacturing and construction sectors is similar for both the SIC and kMatrix definitions</i>		100	101.4	100.0	104.9	101.2	98.6
		100	112.9	109.9	109.8	109.0	116.9
		100	99.0	101.2	103.3	102.2	95.5
		100	117.2	106.8	110.4	110.6	119.4

Sector - LCEGS is made up of elements from many different traditional sectors (including manufacturing, finance, construction, consulting and energy) therefore as a grouping it includes products and services from those sectors that together amount to the total value of the LCEGS grouping.

Scale - The ONS system only produces estimates of the sector size at the country level, whereas the LCEGS data can be provided by Country, Region, City, Local Authority etc.

Table 2 shows a summary of the main differences between the kMatrix data and the ONS EGSS data.

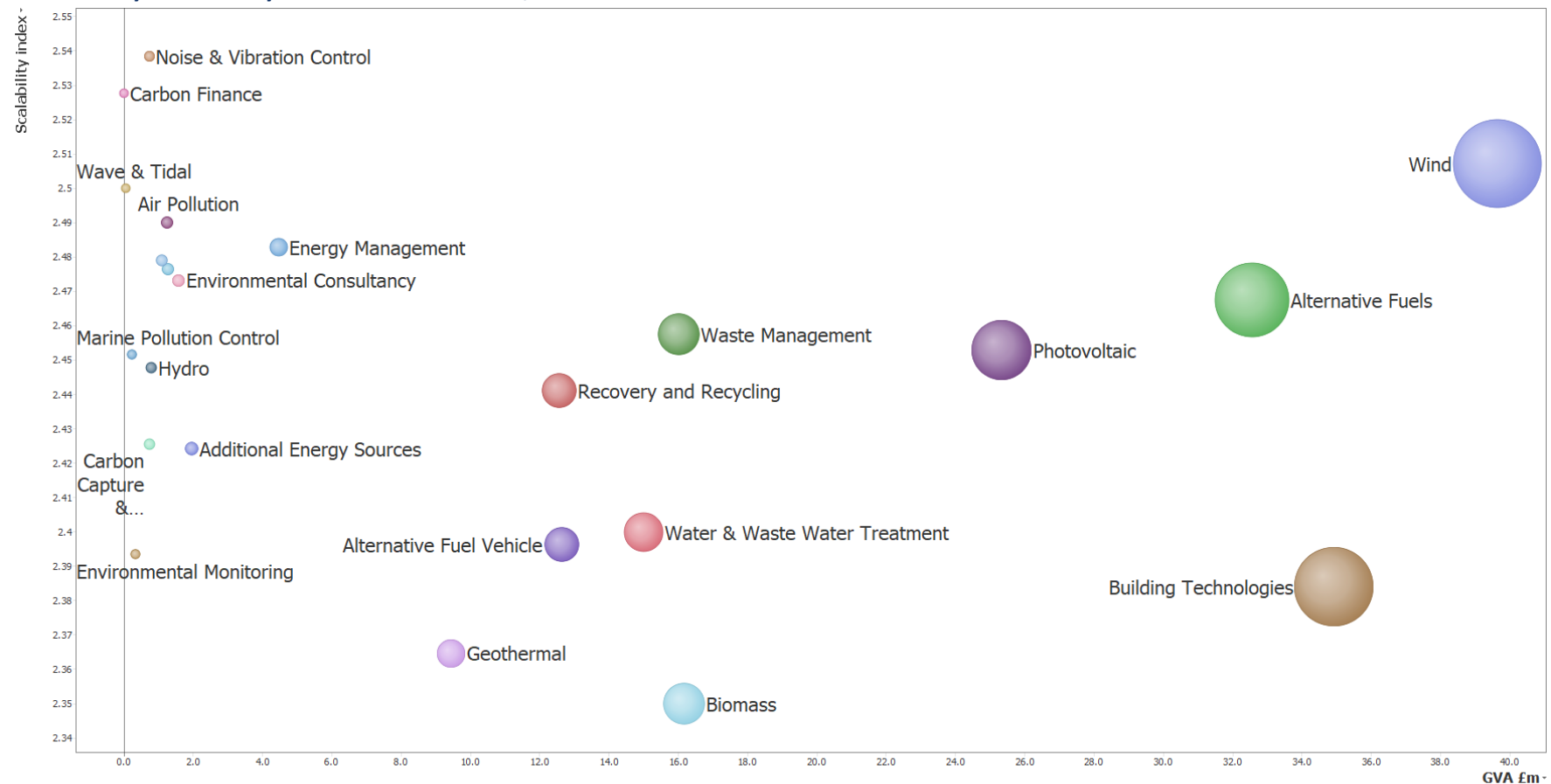
Table 2: kMatrix and ONS – EGSS Comparison Summary Table

	kMatrix - LCEGS	ONS - EGSS
Sector definition	The LCEGS sector includes the EGSS definition but expands it to include all activities that contribute and enable growth in the sector. Those elements which are excluded from EGSS which are produced for purposes that, while beneficial to the environment, primarily satisfy technical, human and economic needs or that are requirements for health and safety are included in LCEGS if they contribute to the sector. For more information please see Appendix 3 and Appendix 4 of this report.	The environmental goods and services sector is made up of areas of the economy engaged in producing goods and services for environmental protection purposes, as well as those engaged in conserving and maintaining natural resources. Excluded from the scope of EGSS are goods and services produced for purposes that, while beneficial to the environment, primarily satisfy technical, human and economic needs or that are requirements for health and safety.
Sector size measurement	Triangulation of data from multiple sources	Company surveys via company self-certification
Sector sales coverage	Full value of sales for the sector, including supply and value chain	Only sector sales, not including supply or value chains
Geographic range of coverage	Global, Country, Regional, City & Local Authority	Country
Available data includes	Sales, number of employees, number of companies, exports, growth rates (historical and forecast) & 60+ more metrics	Output, GVA, employee count and exports
For further information and detail on the ONS – EGSS definition: https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2010to2015		

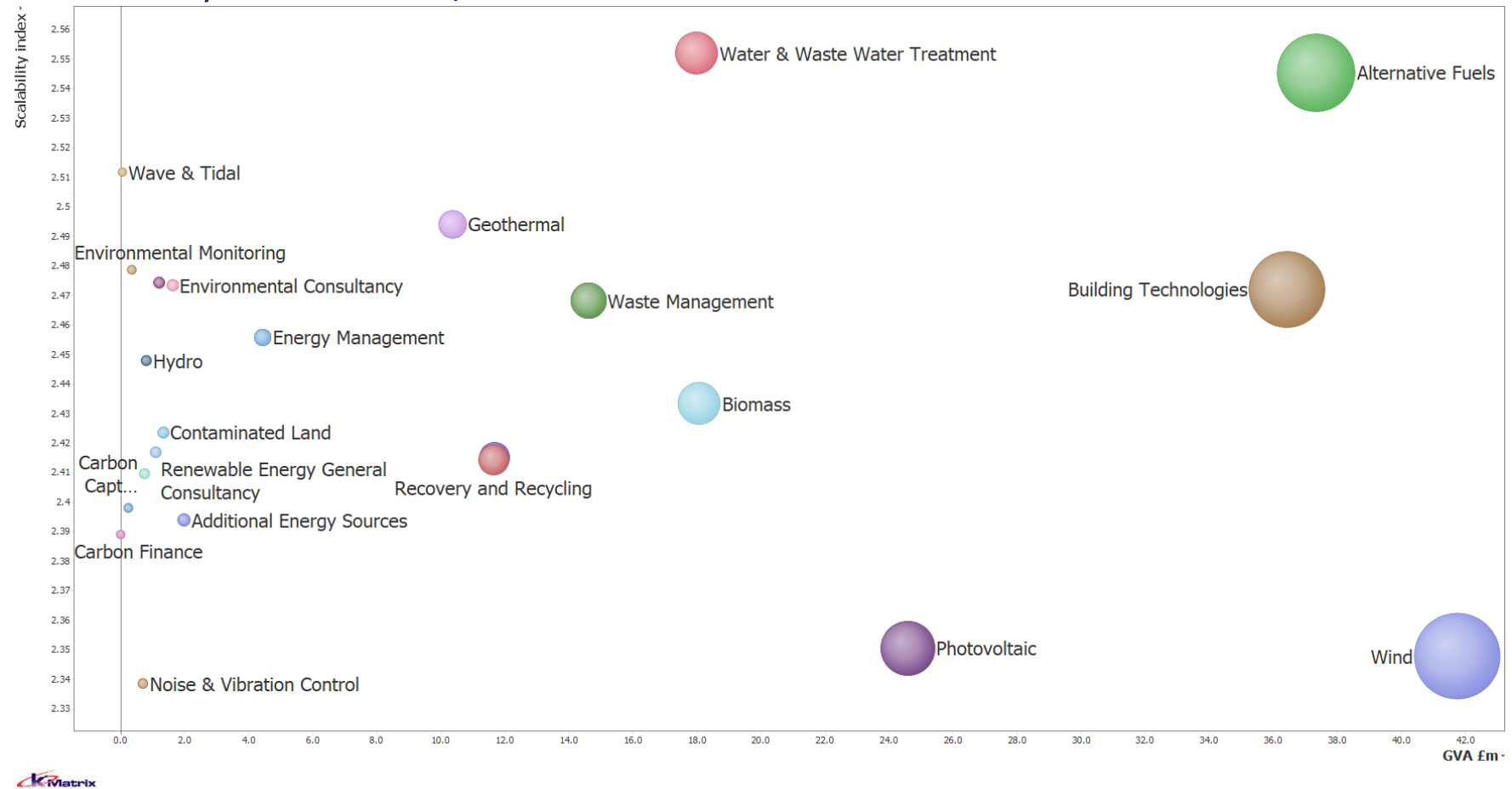
Appendix 4

LCEGS Scalability vs. GVA by Local Authority for Level 2

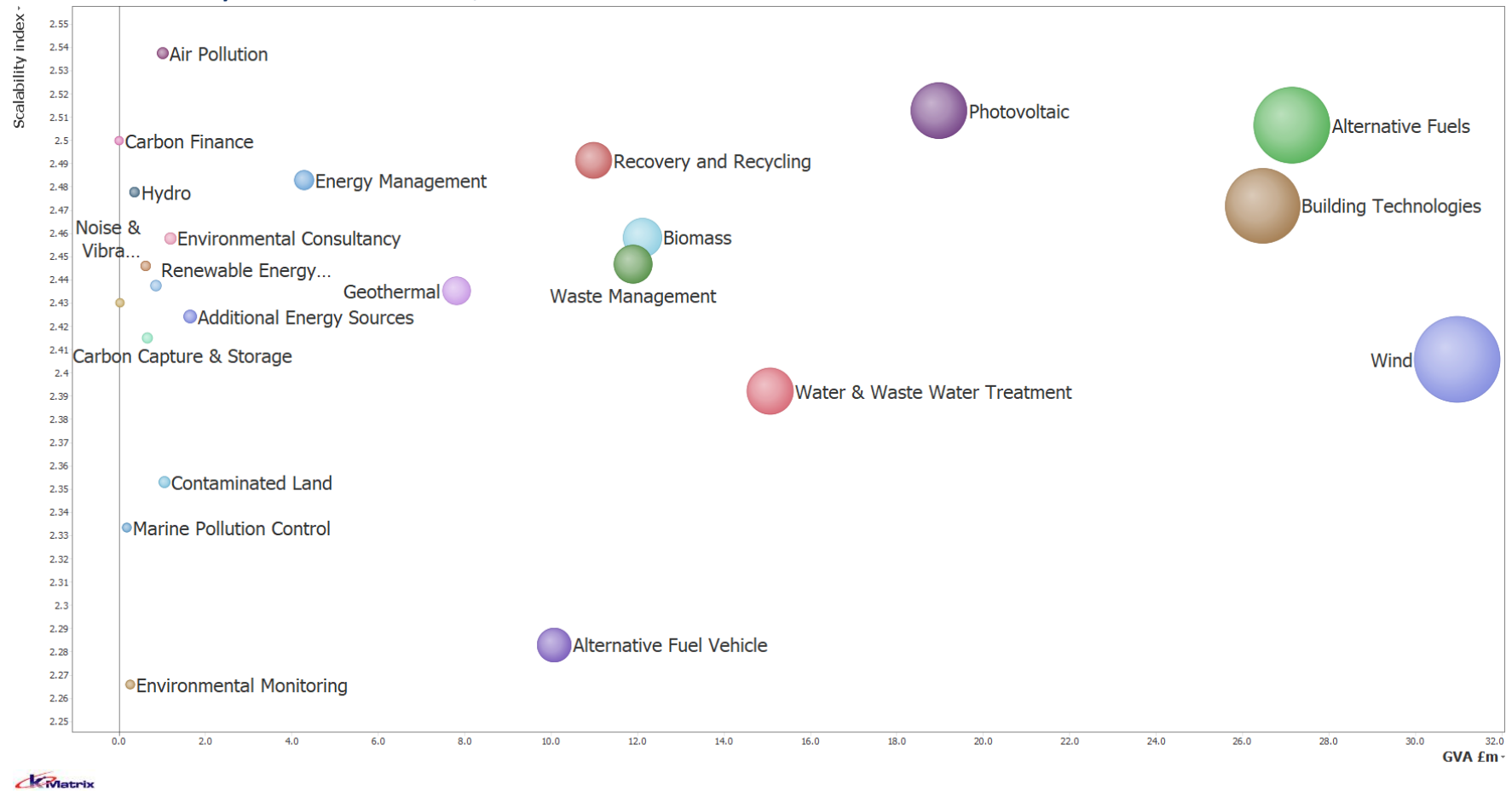
Amber Valley – Scalability Index vs. GVA for 2019/20



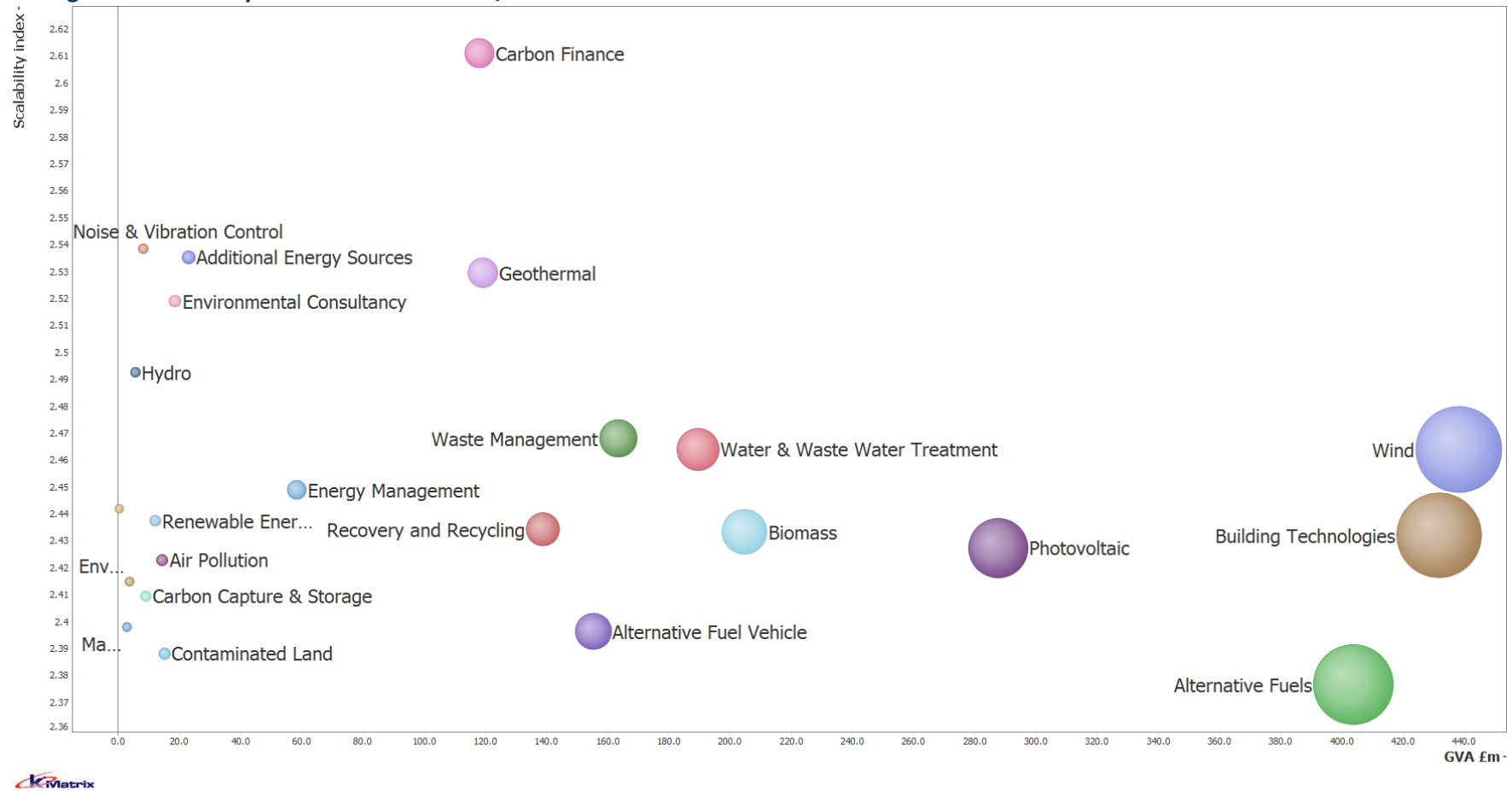
Ashfield – Scalability Index vs. GVA for 2019/20



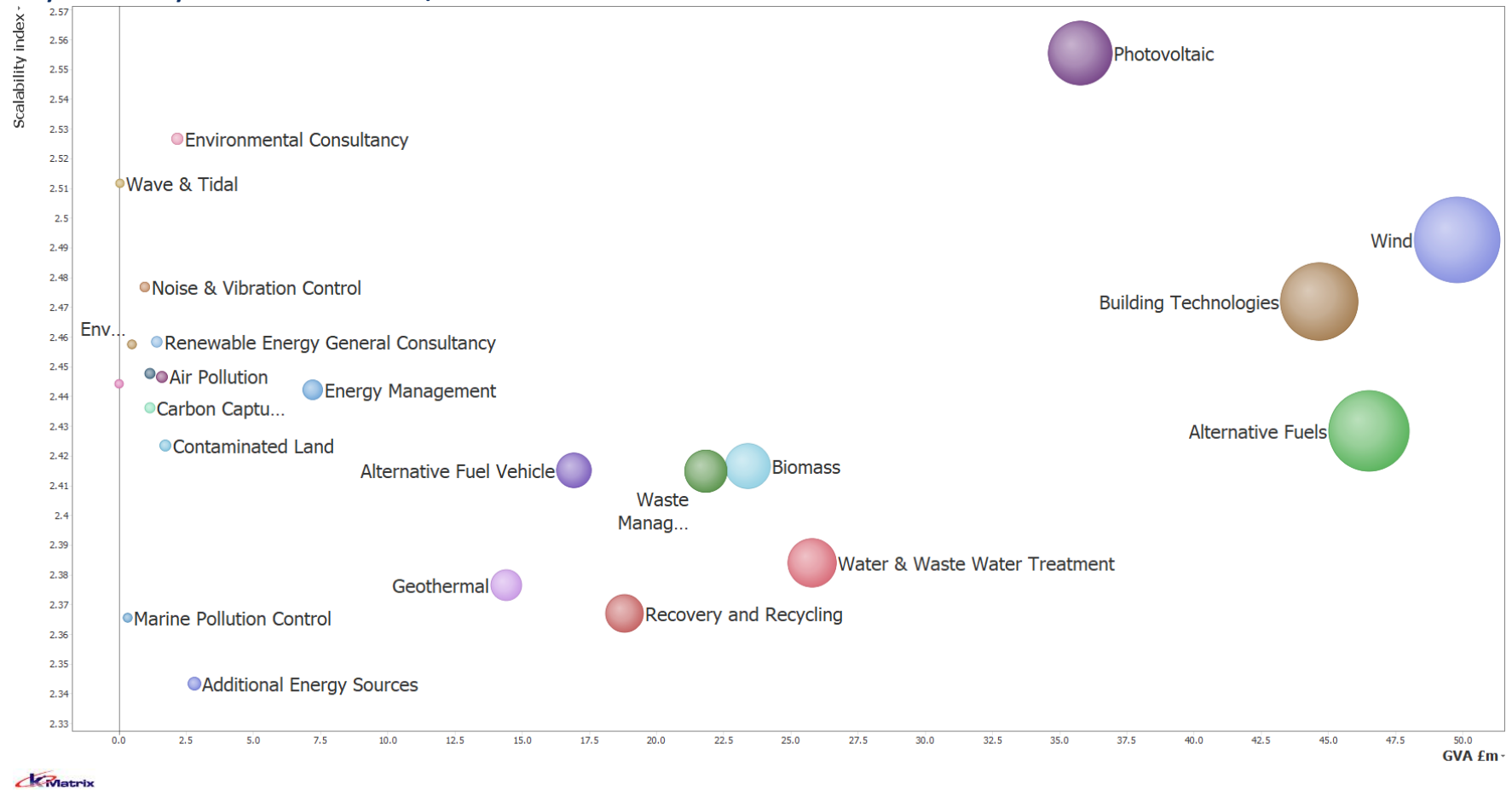
Bassetlaw – Scalability Index vs. GVA for 2019/20



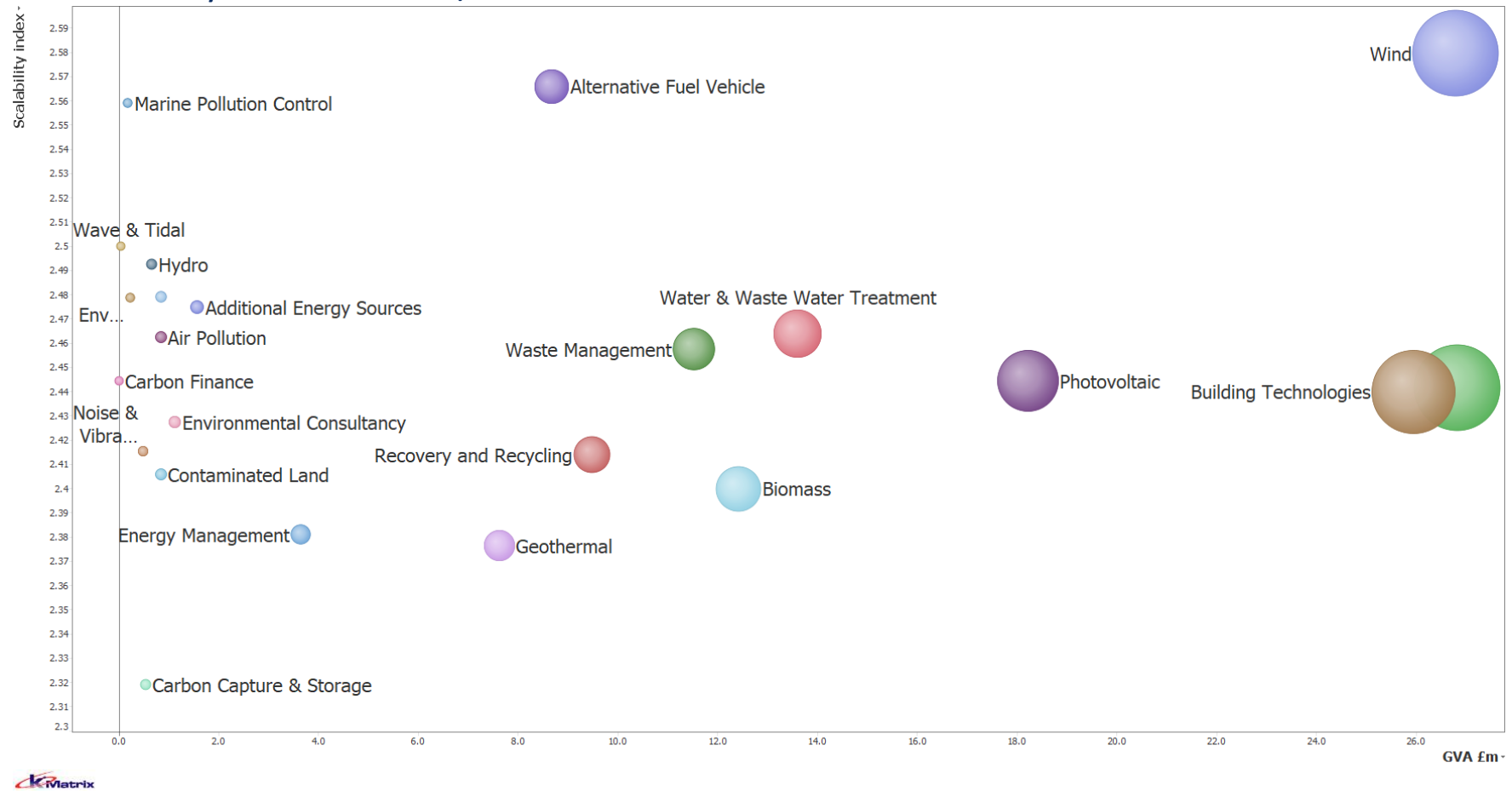
Birmingham – Scalability Index vs. GVA for 2019/20



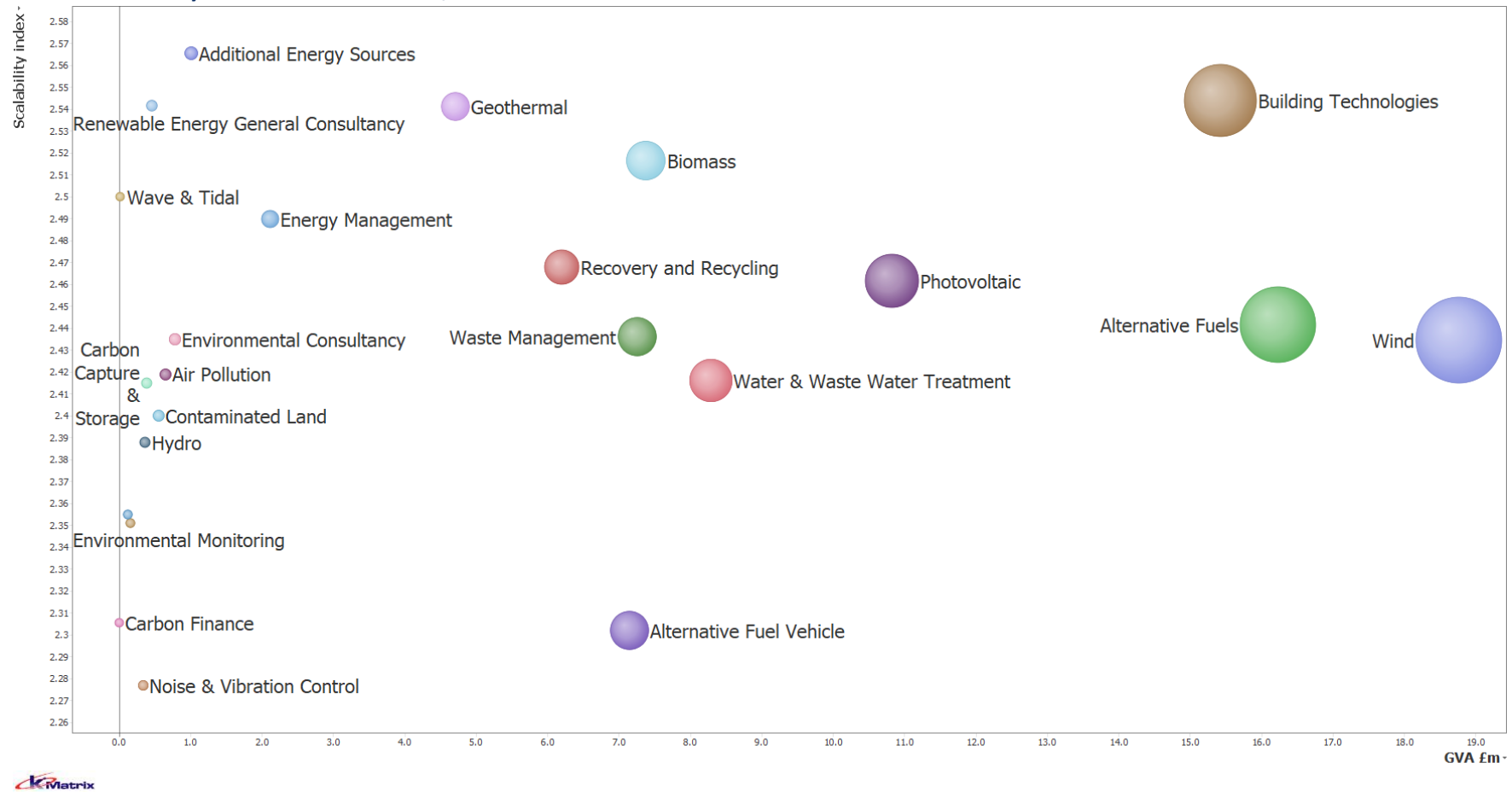
Blaby – Scalability Index vs. GVA for 2019/20



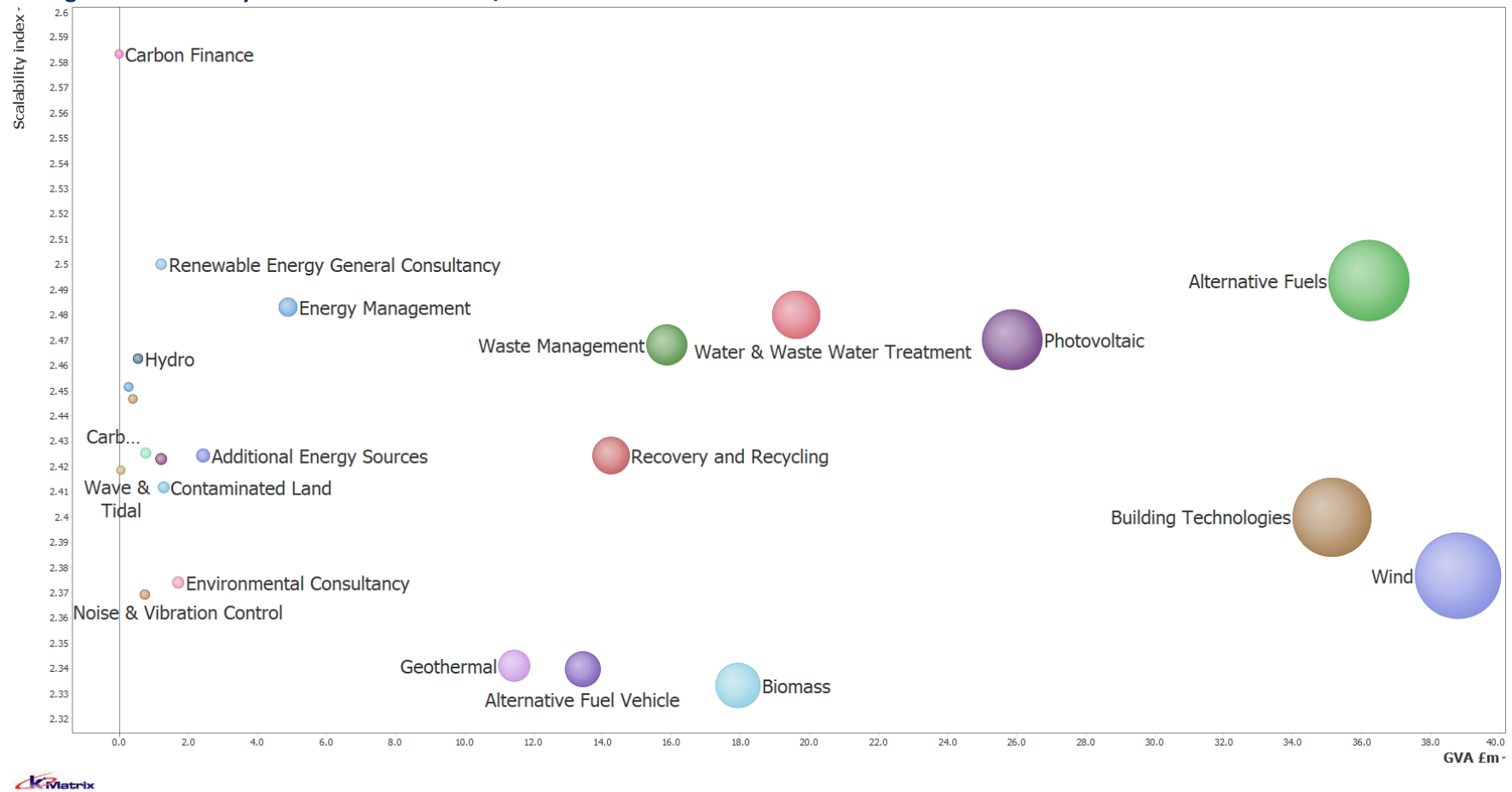
Bolsover – Scalability Index vs. GVA for 2019/20



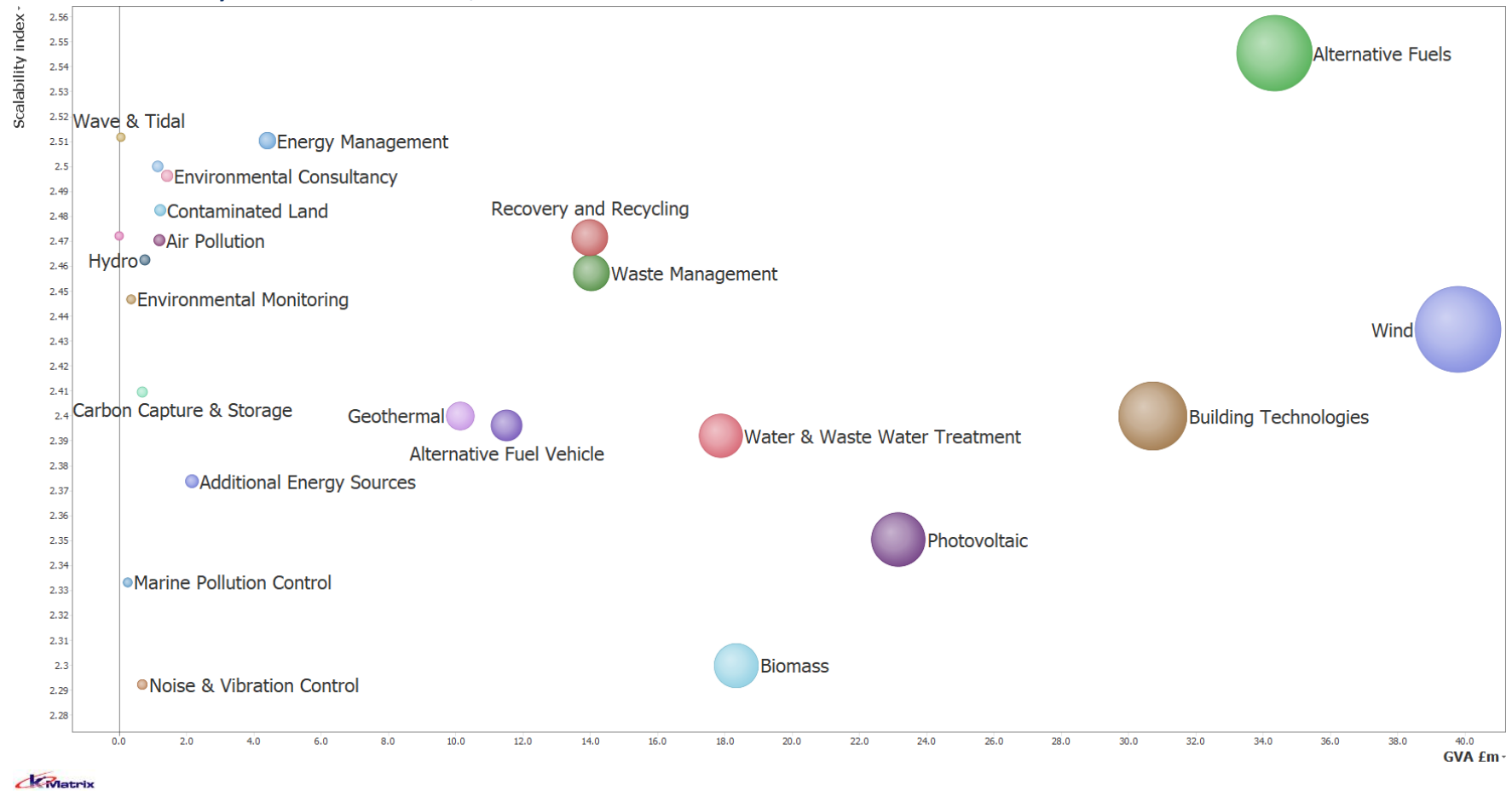
Boston – Scalability Index vs. GVA for 2019/20



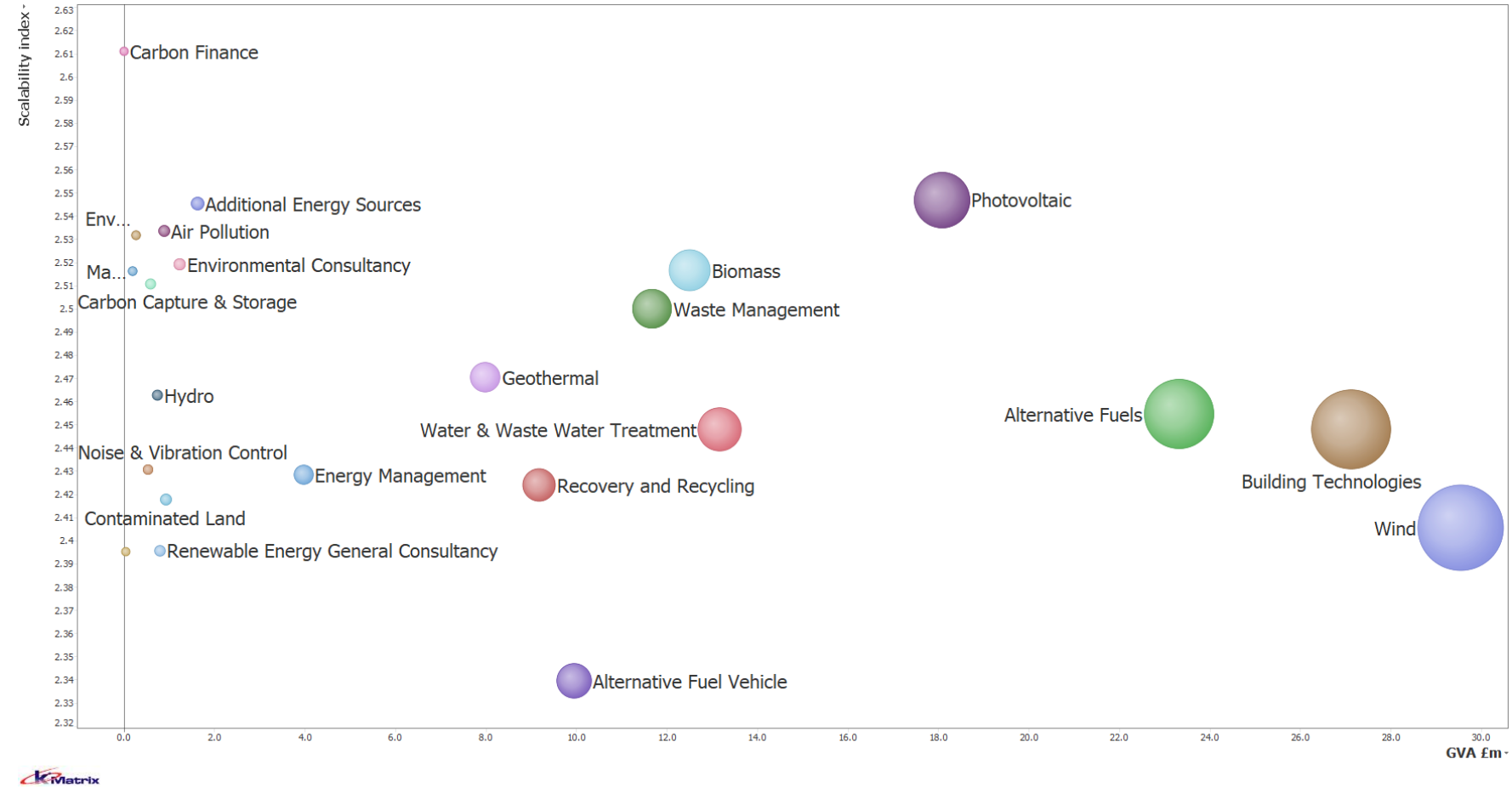
Bromsgrove – Scalability Index vs. GVA for 2019/20



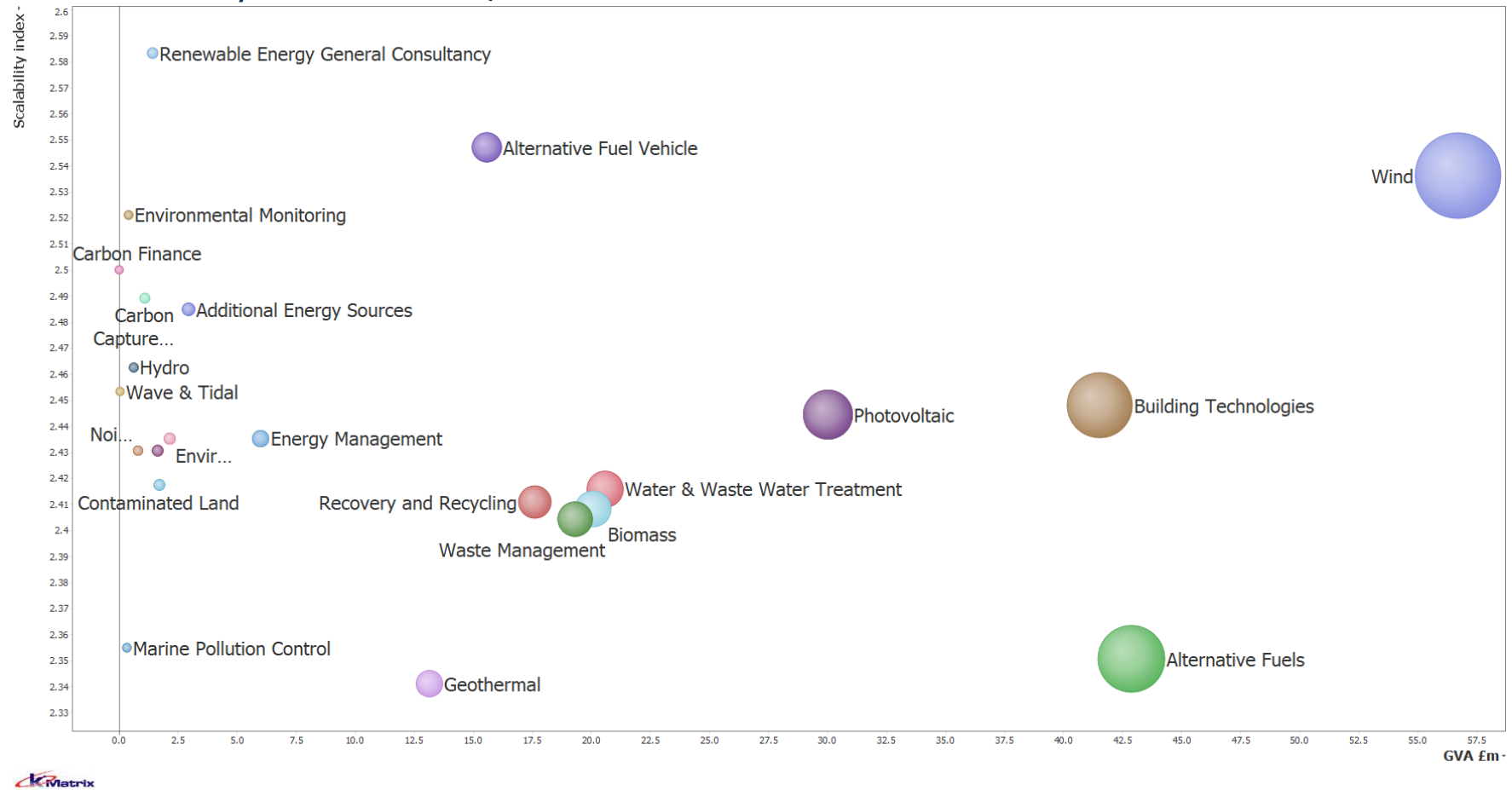
Broxtowe – Scalability Index vs. GVA for 2019/20



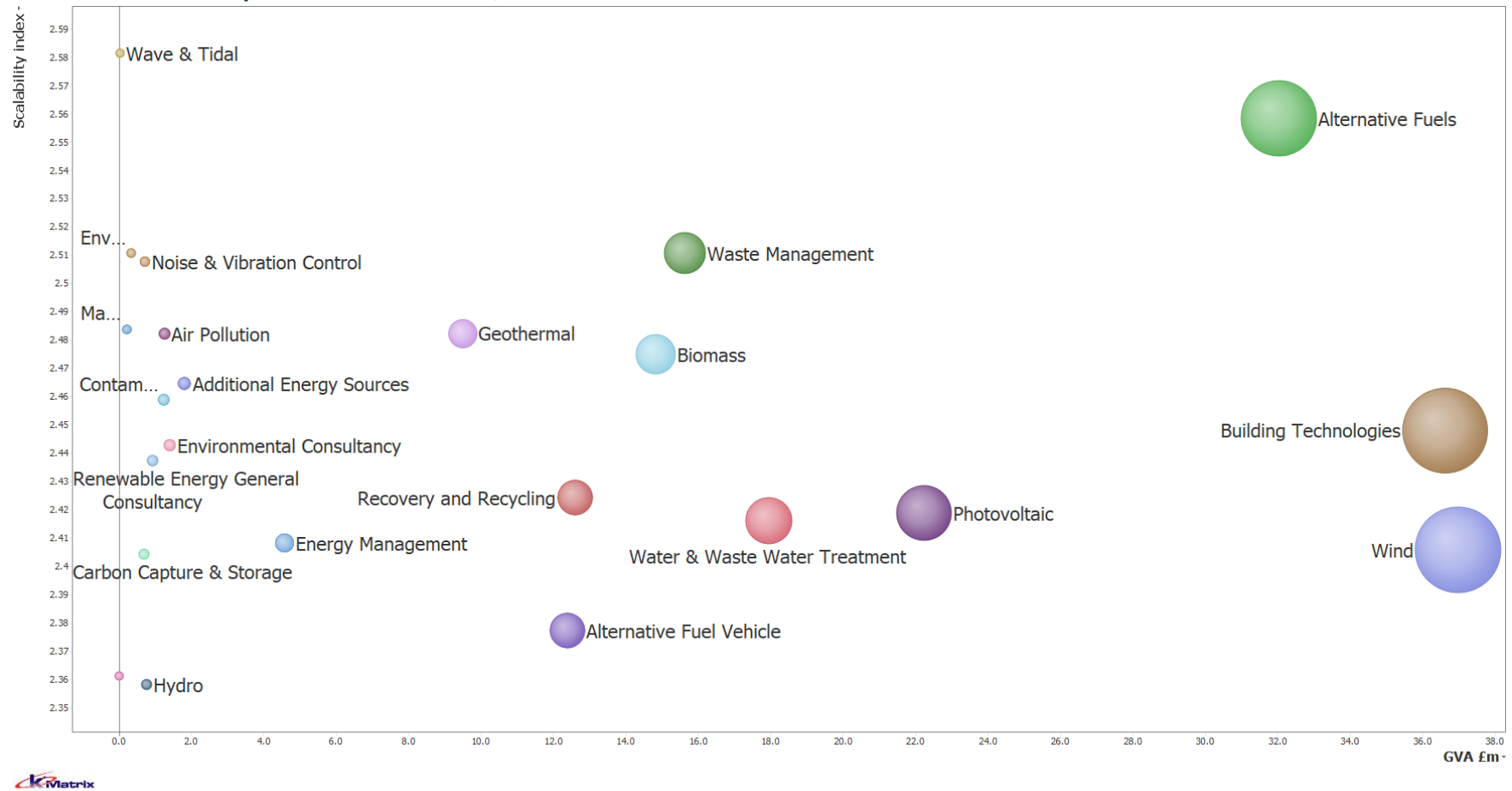
Cannock Chase – Scalability Index vs. GVA for 2019/20



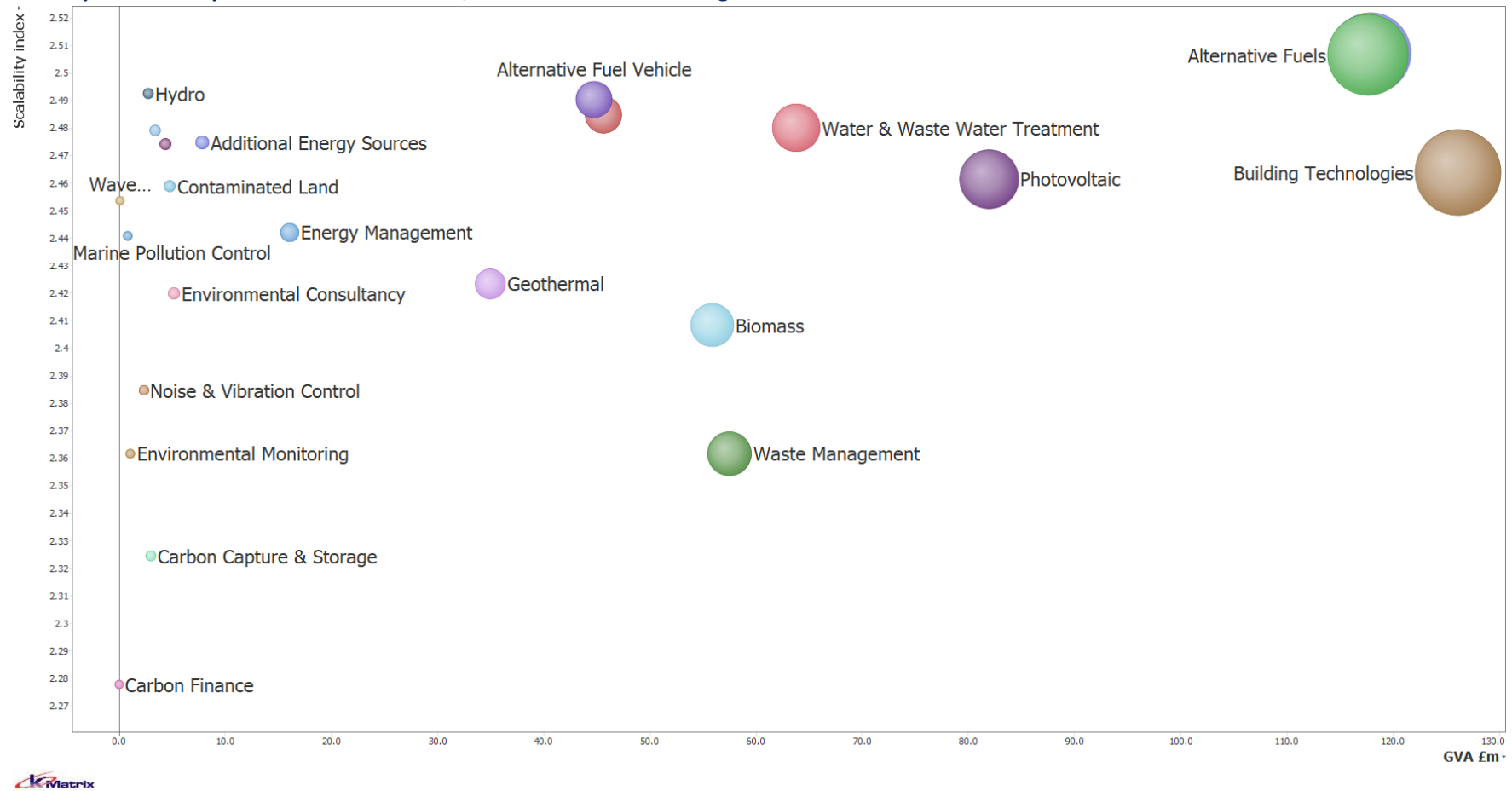
Charnwood – Scalability Index vs. GVA for 2019/20



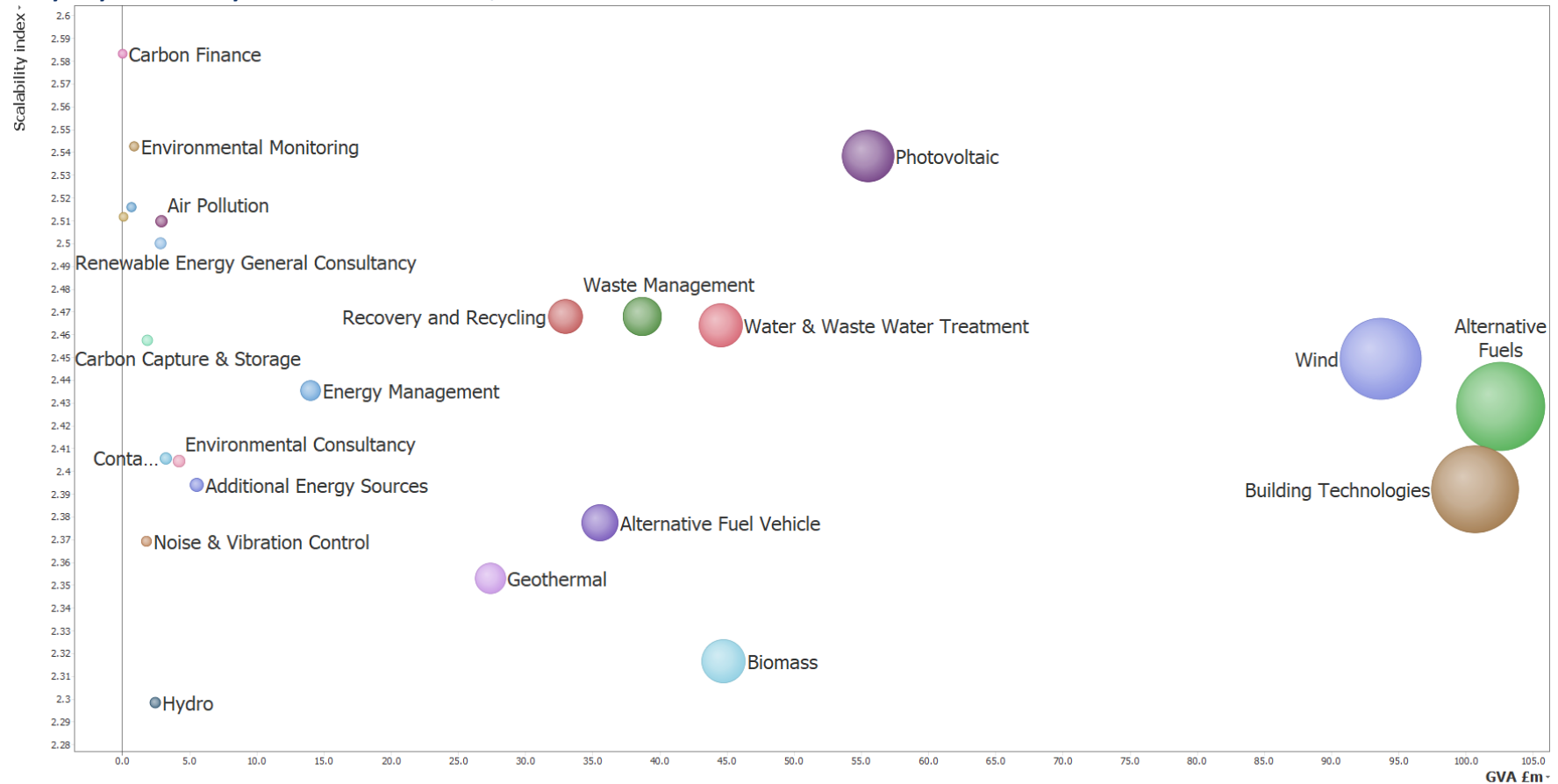
Chesterfield – Scalability Index vs. GVA for 2019/20



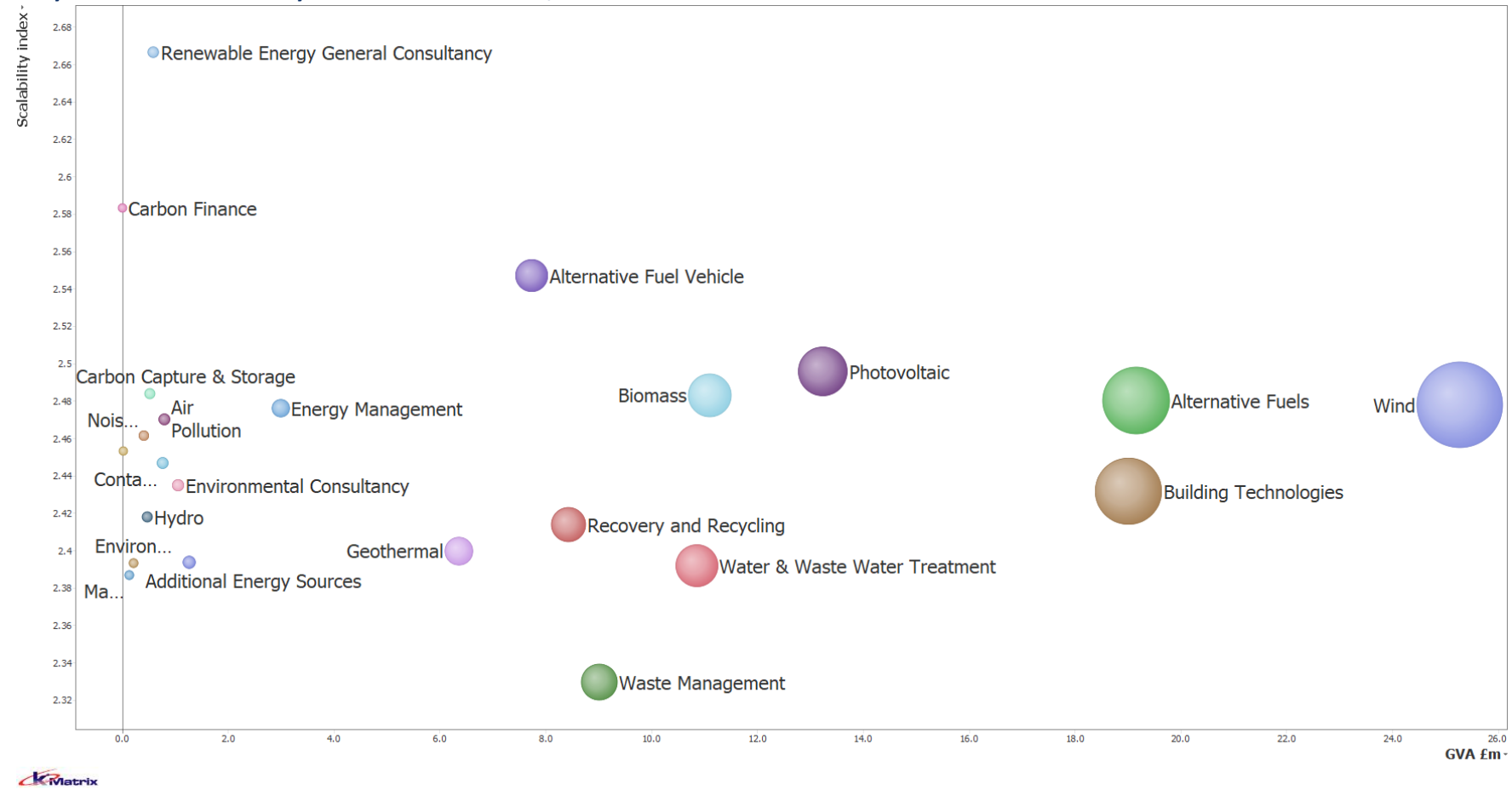
Coventry – Scalability Index vs. GVA for 2019/20 – Note: Wind is sitting behind Alternative Fuels



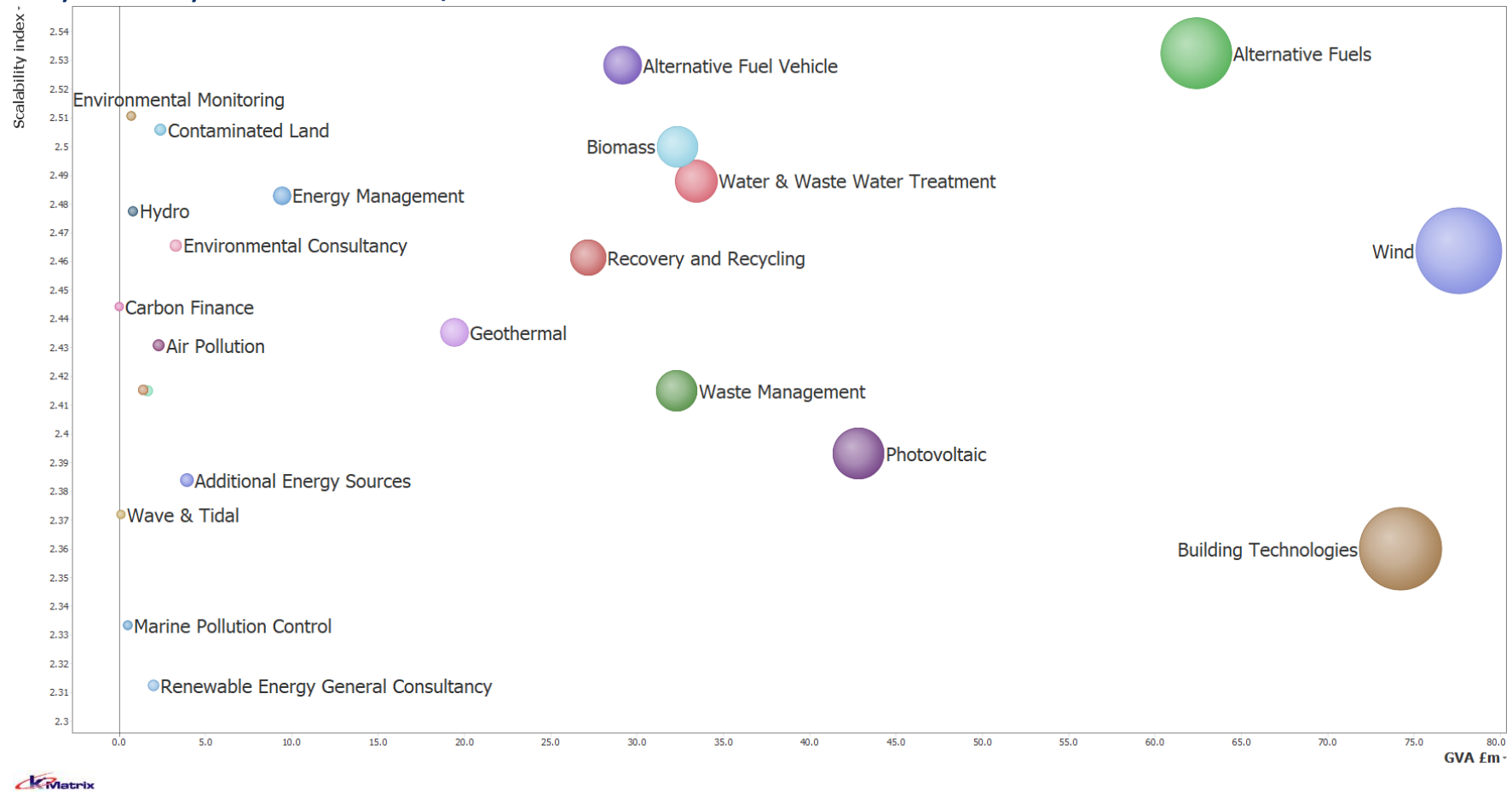
Derby City – Scalability Index vs. GVA for 2019/20



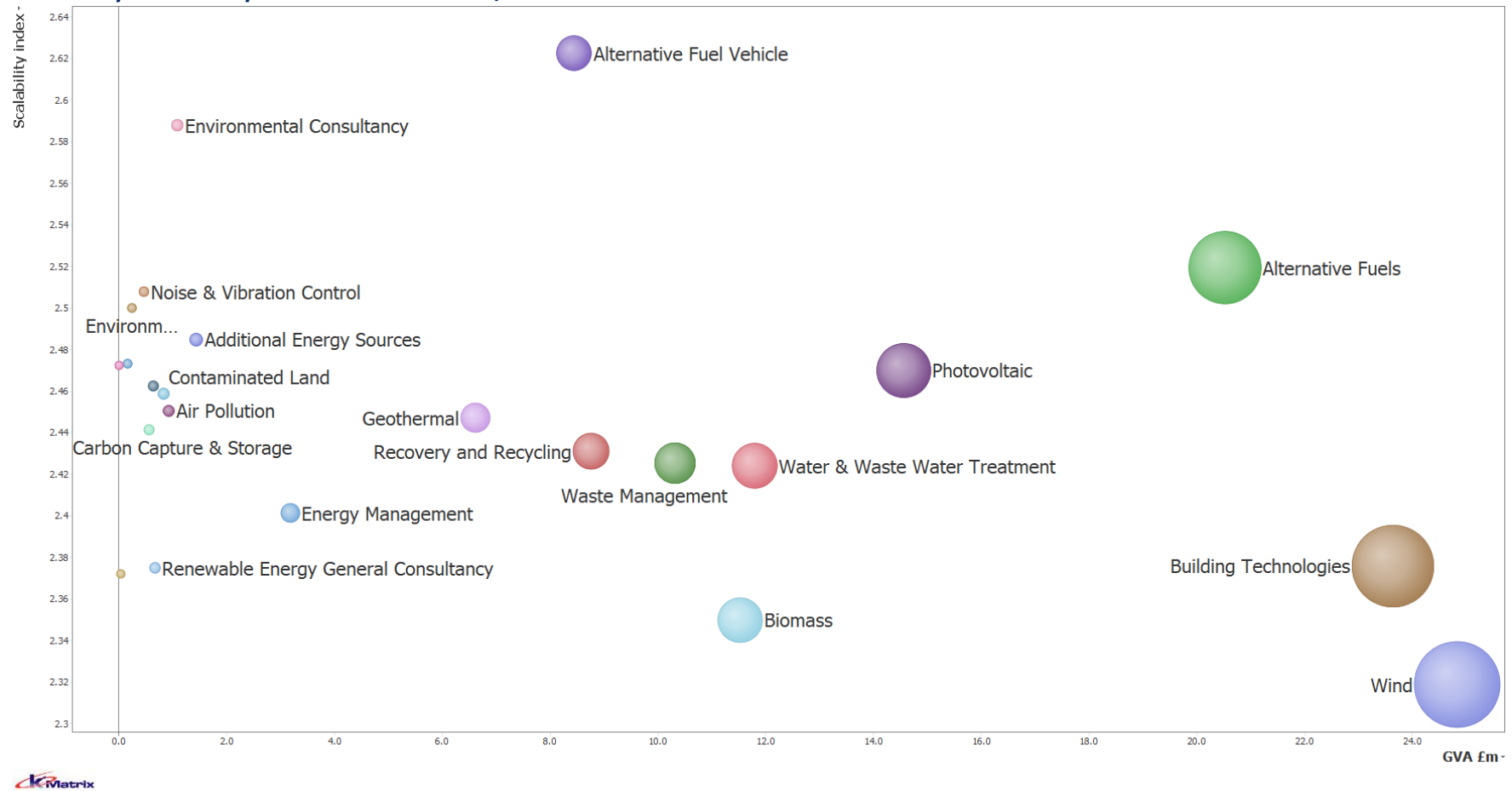
Derbyshire Dales – Scalability Index vs. GVA for 2019/20



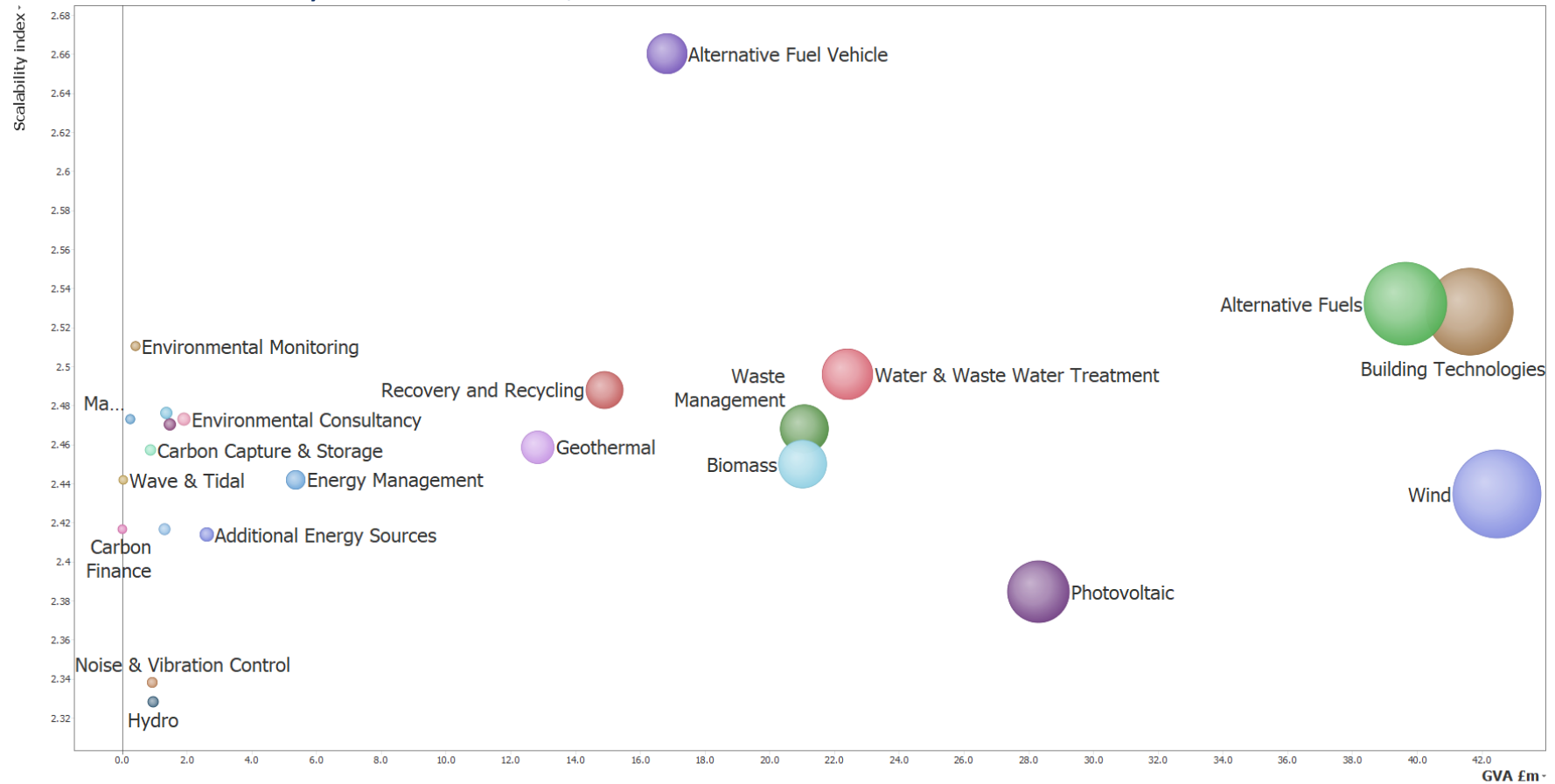
Dudley – Scalability Index vs. GVA for 2019/20



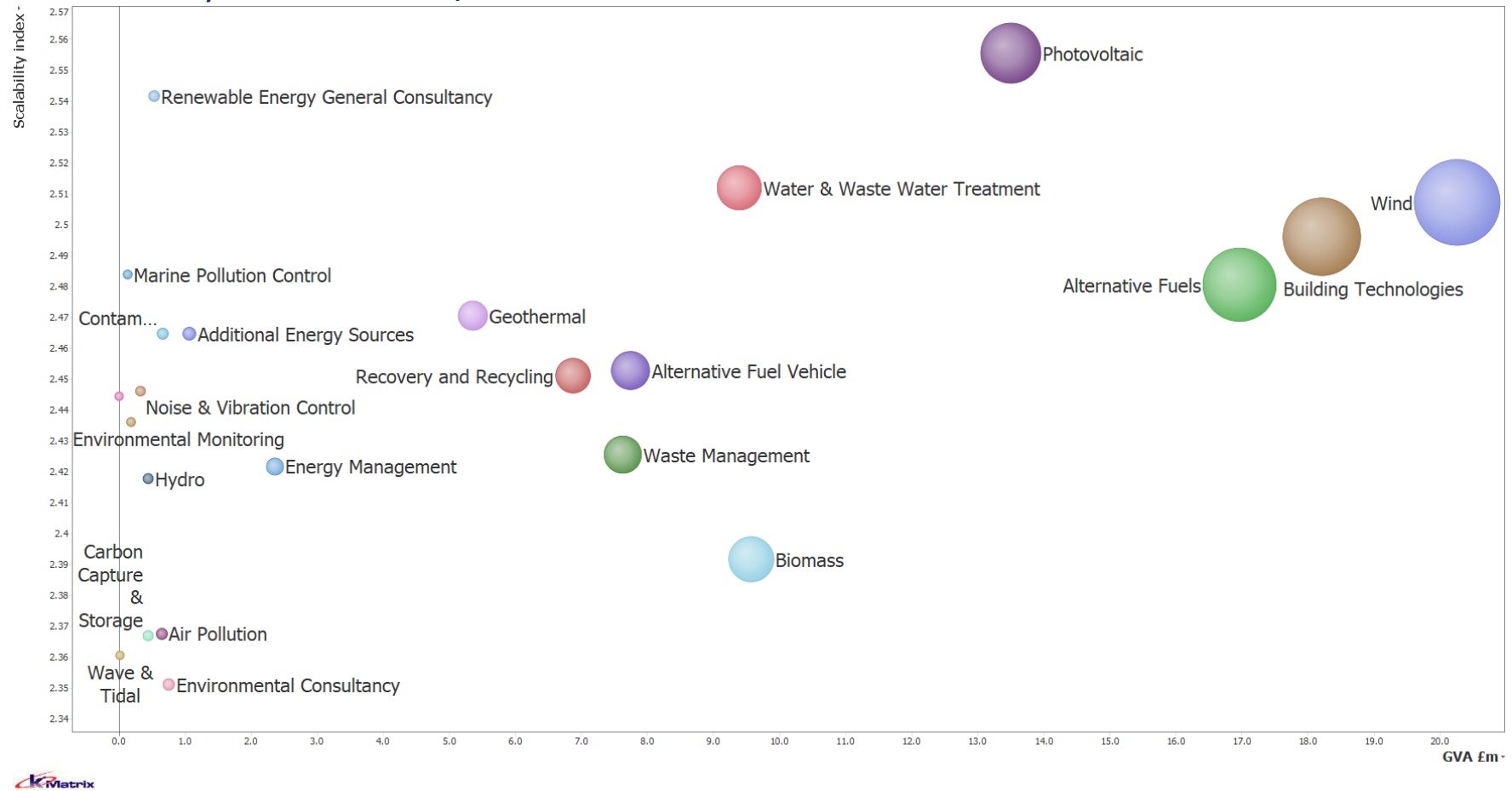
East Lindsey – Scalability Index vs. GVA for 2019/20



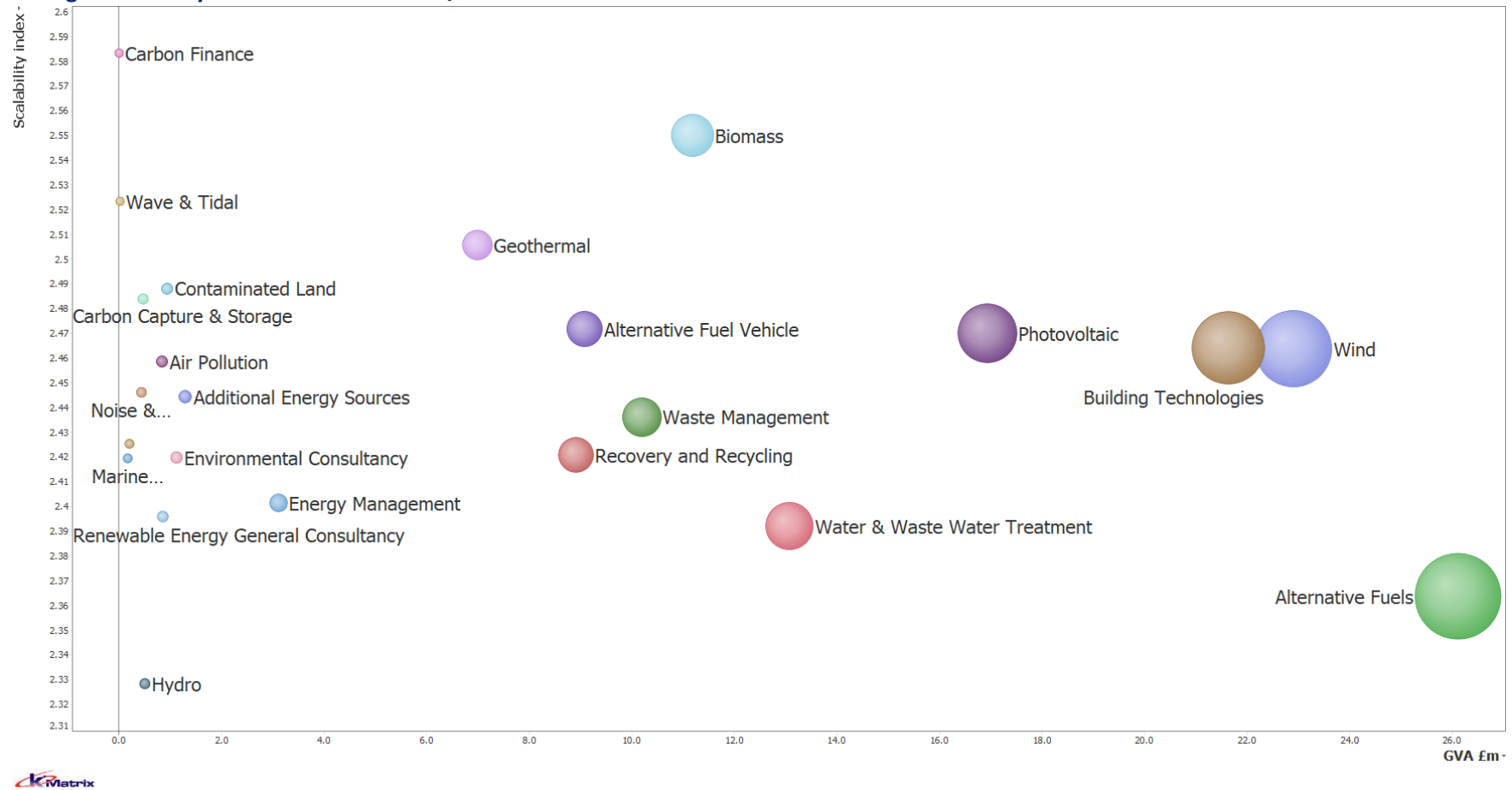
East Staffordshire – Scalability Index vs. GVA for 2019/20



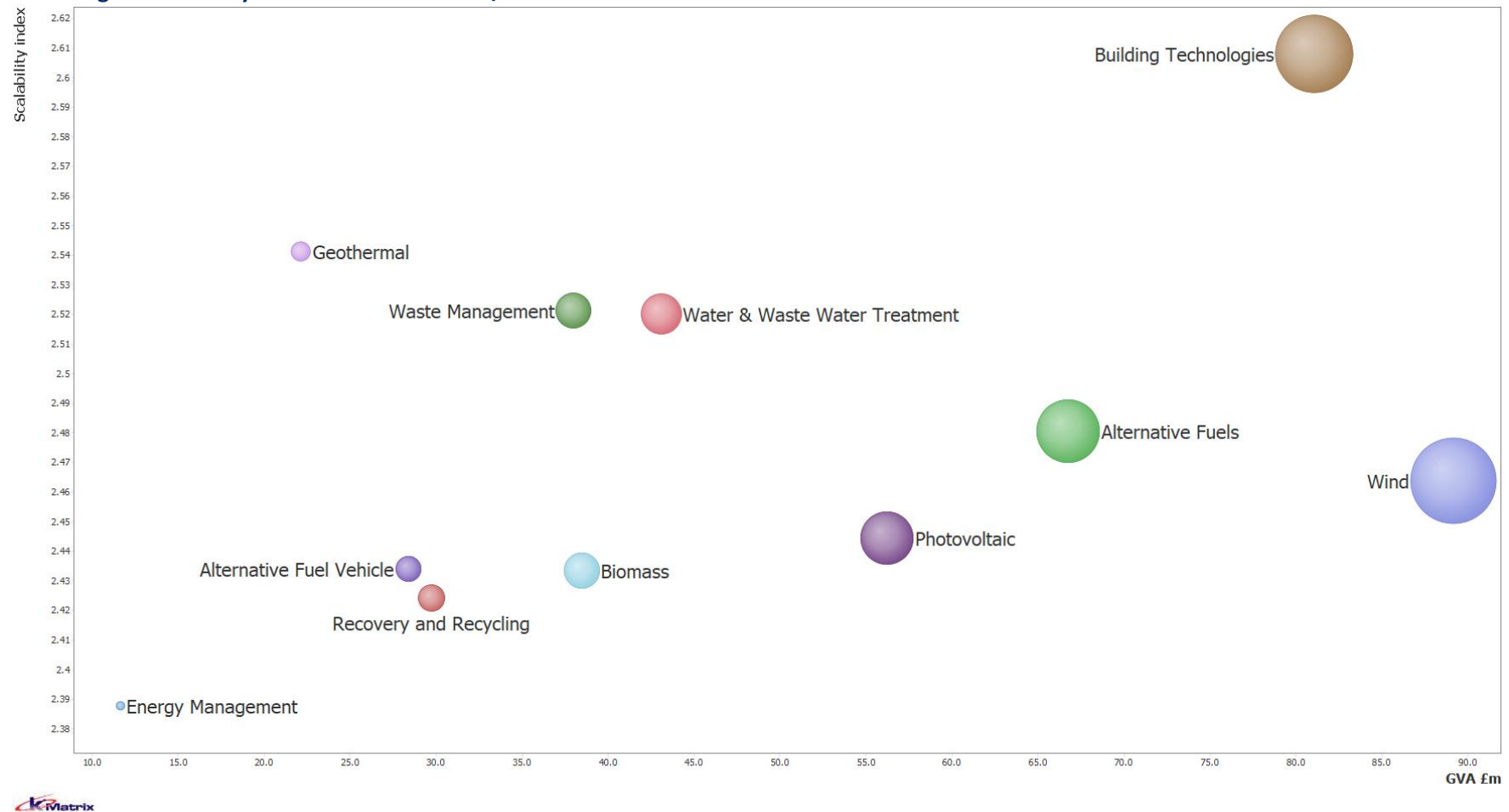
Erewash – Scalability Index vs. GVA for 2019/20



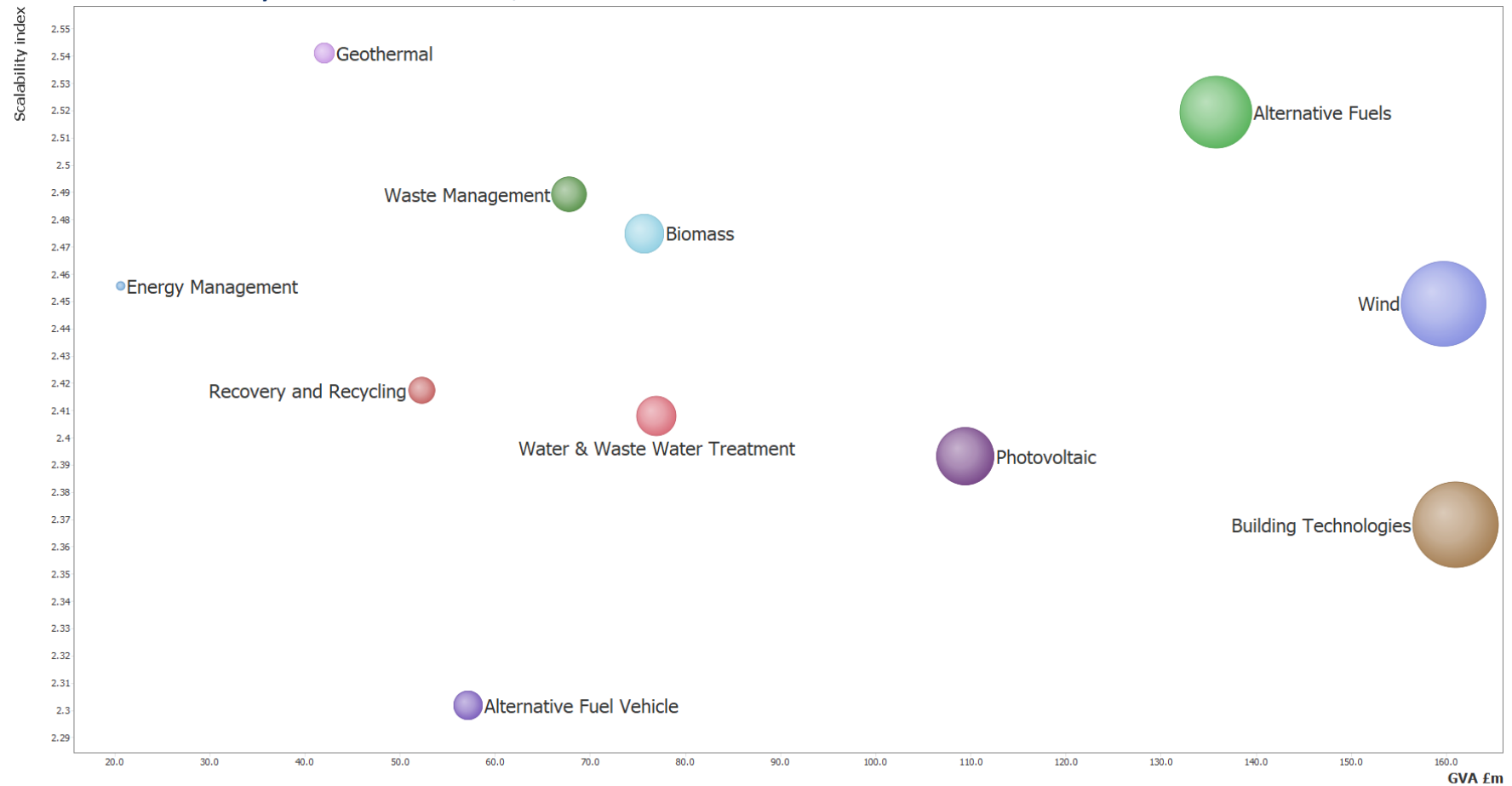
Gedling – Scalability Index vs. GVA for 2019/20



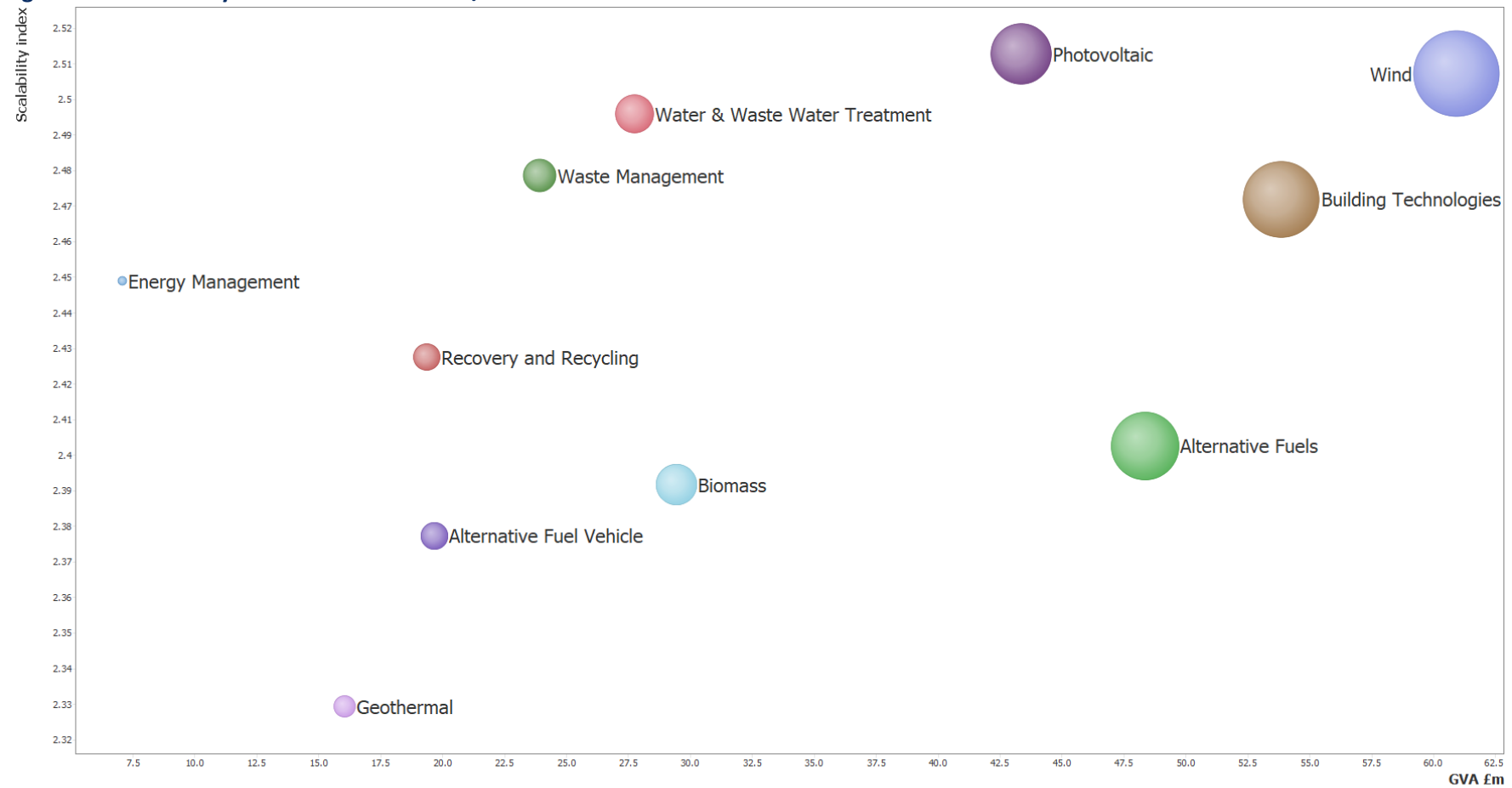
Harborough – Scalability Index vs. GVA for 2019/20



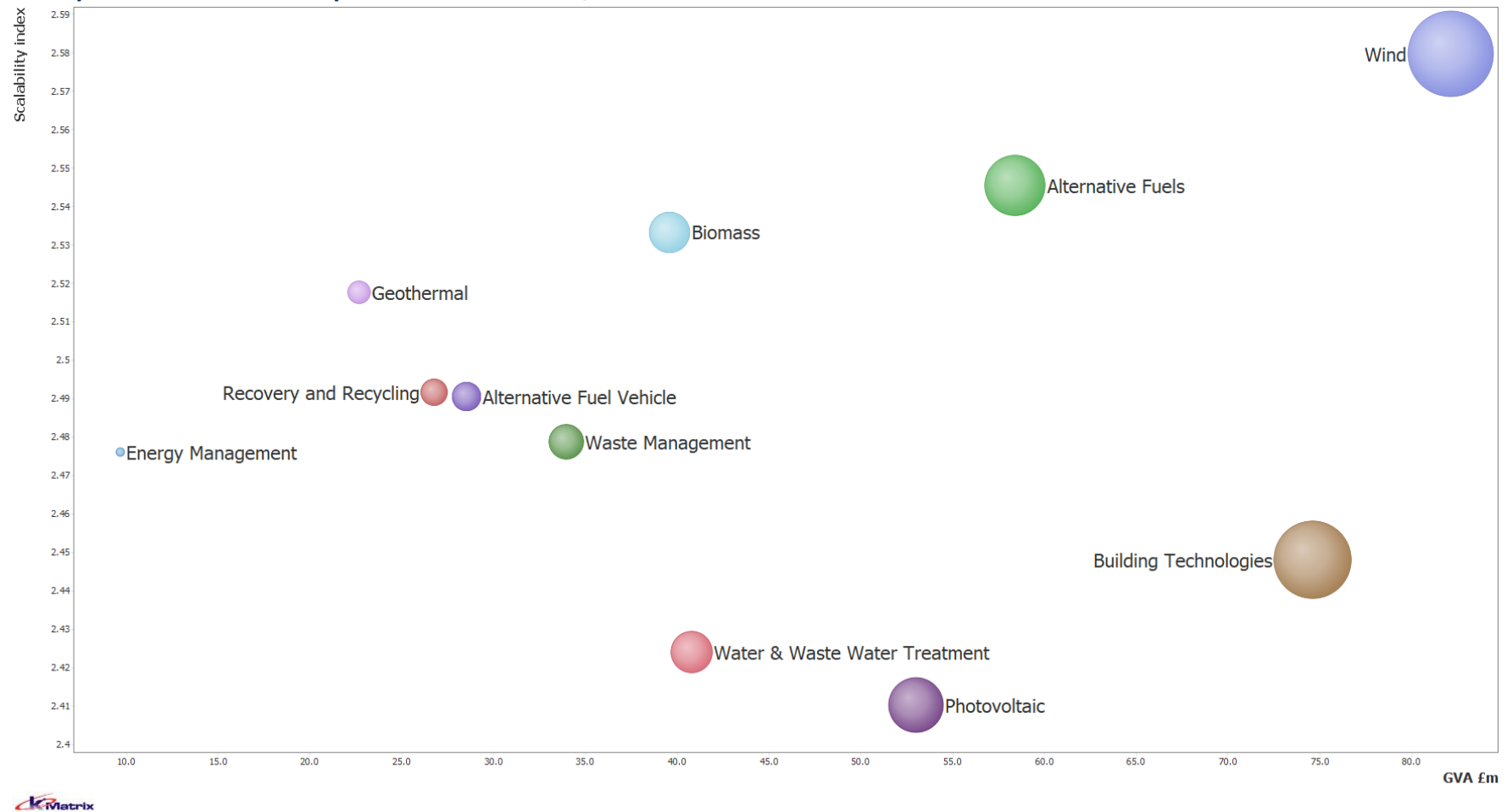
Herefordshire – Scalability Index vs. GVA for 2019/20



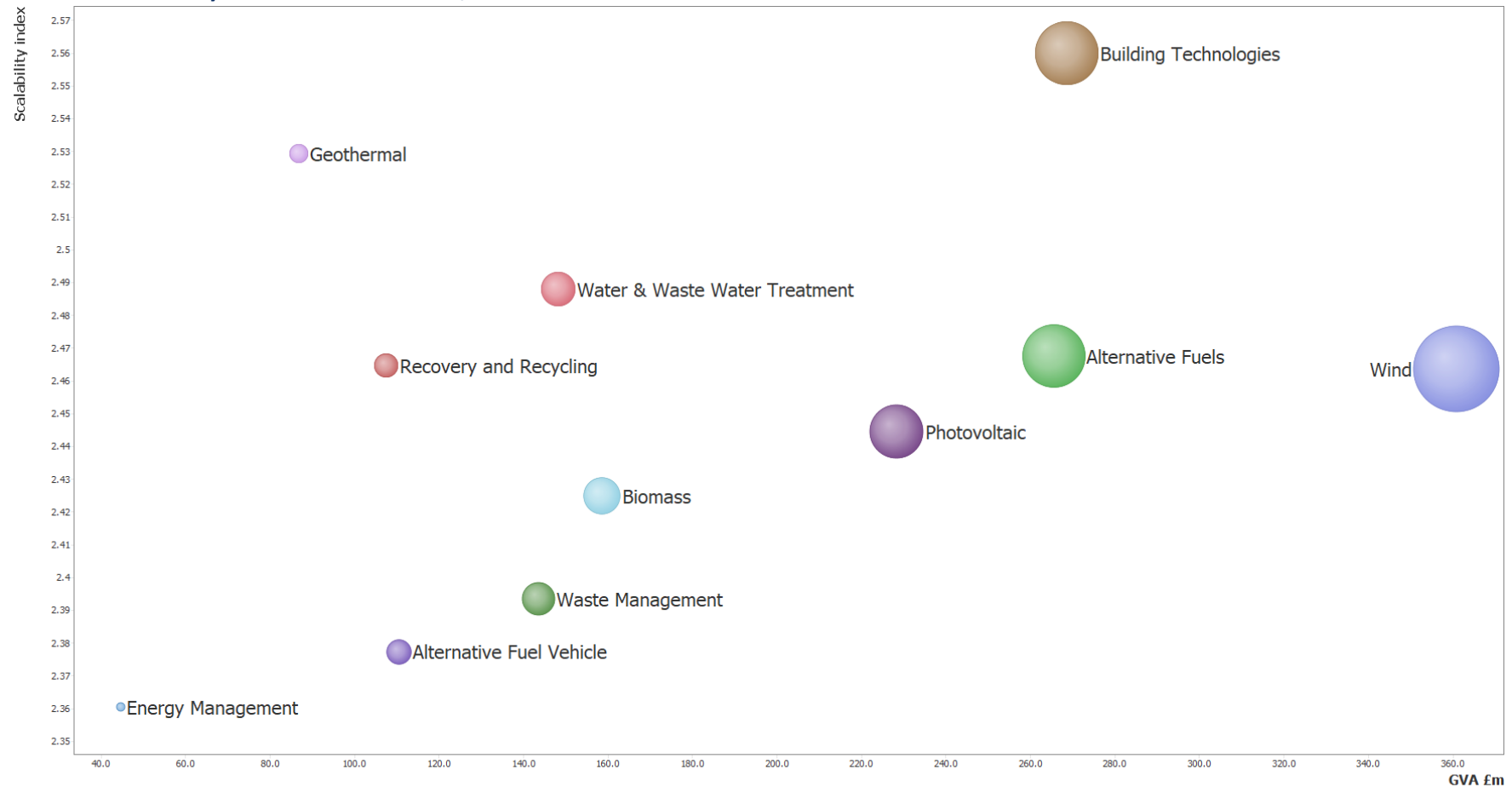
High Peak – Scalability Index vs. GVA for 2019/20



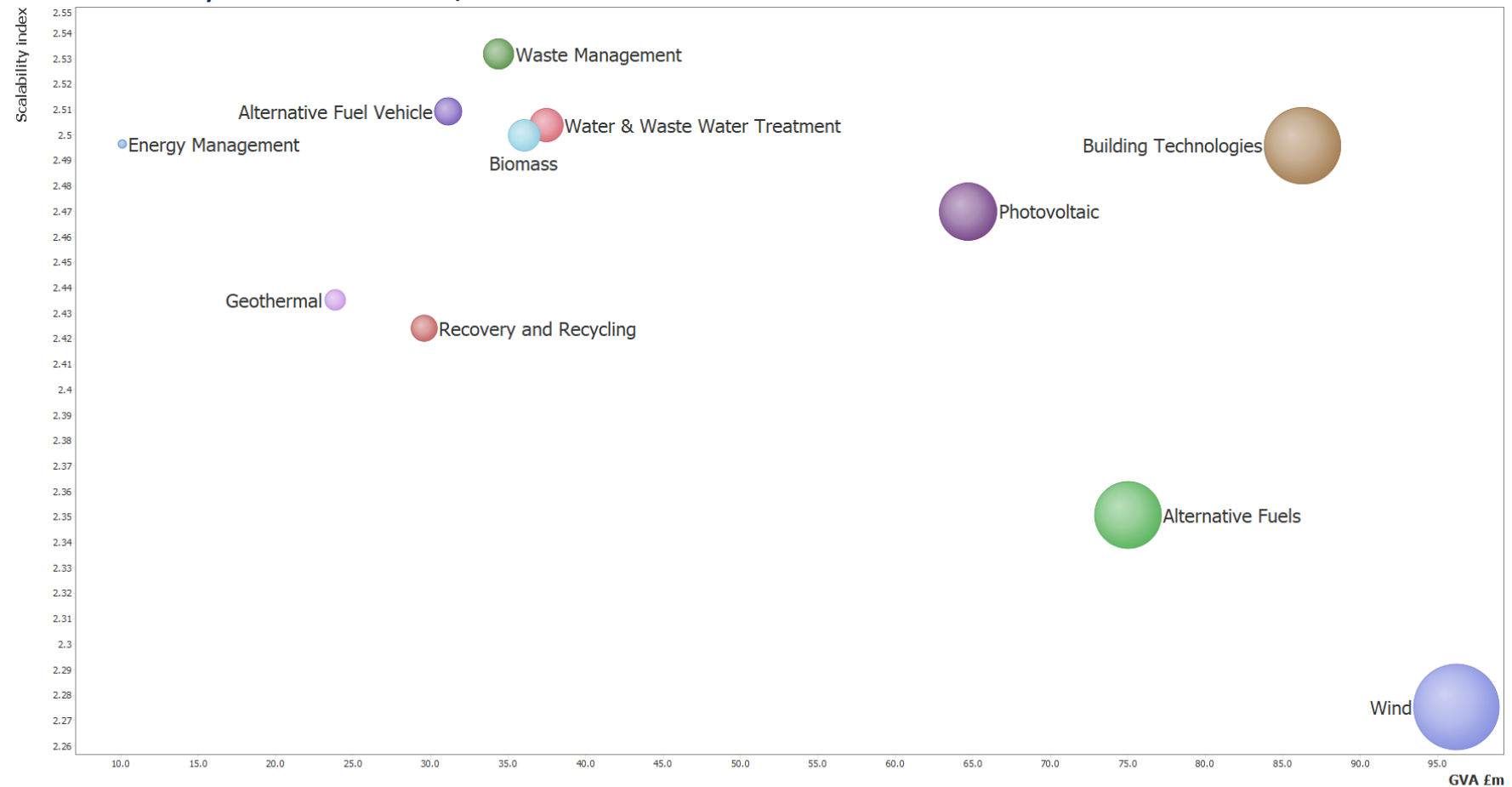
Hinckley & Bosworth – Scalability Index vs. GVA for 2019/20



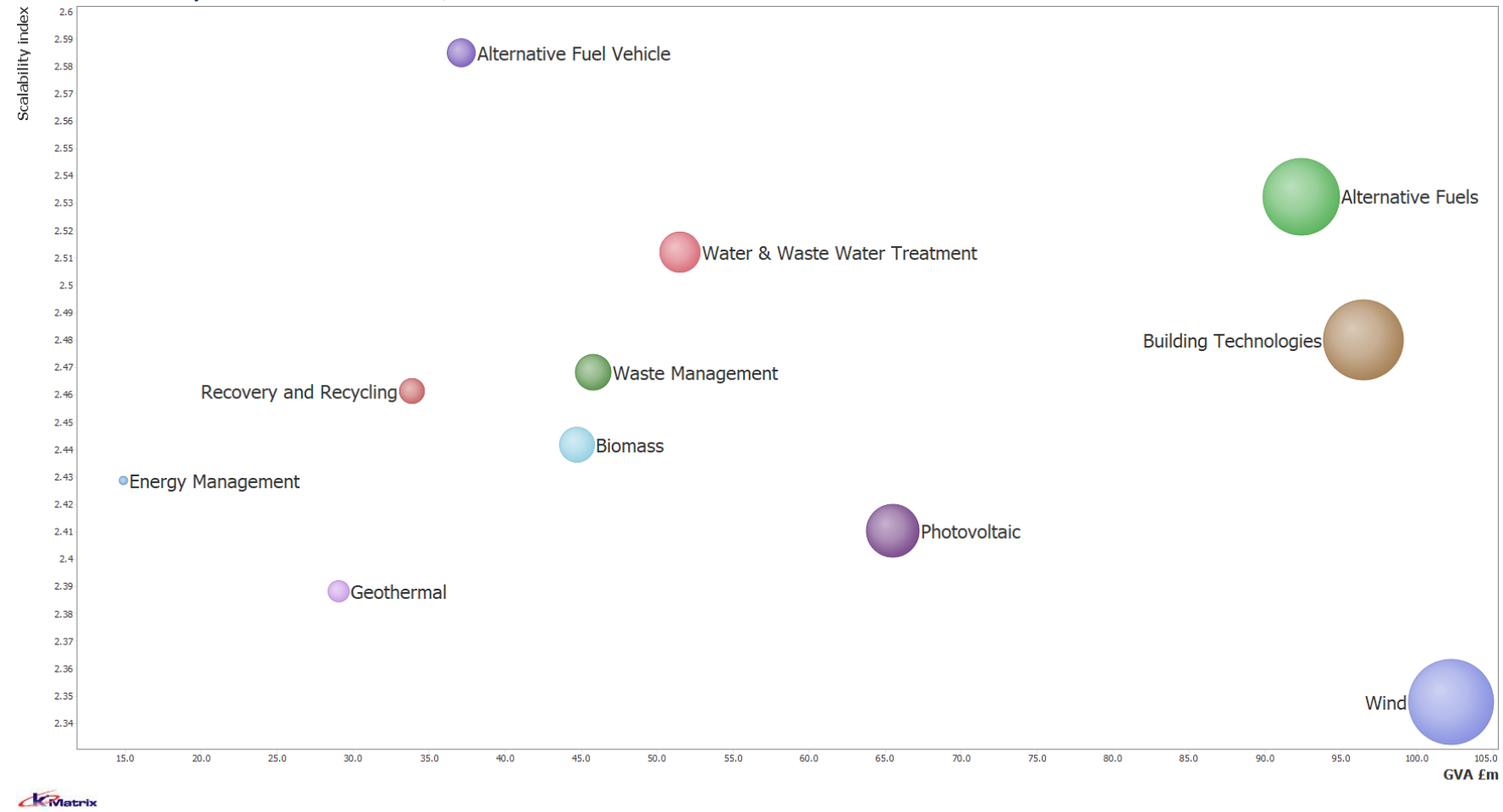
Leicester – Scalability Index vs. GVA for 2019/20



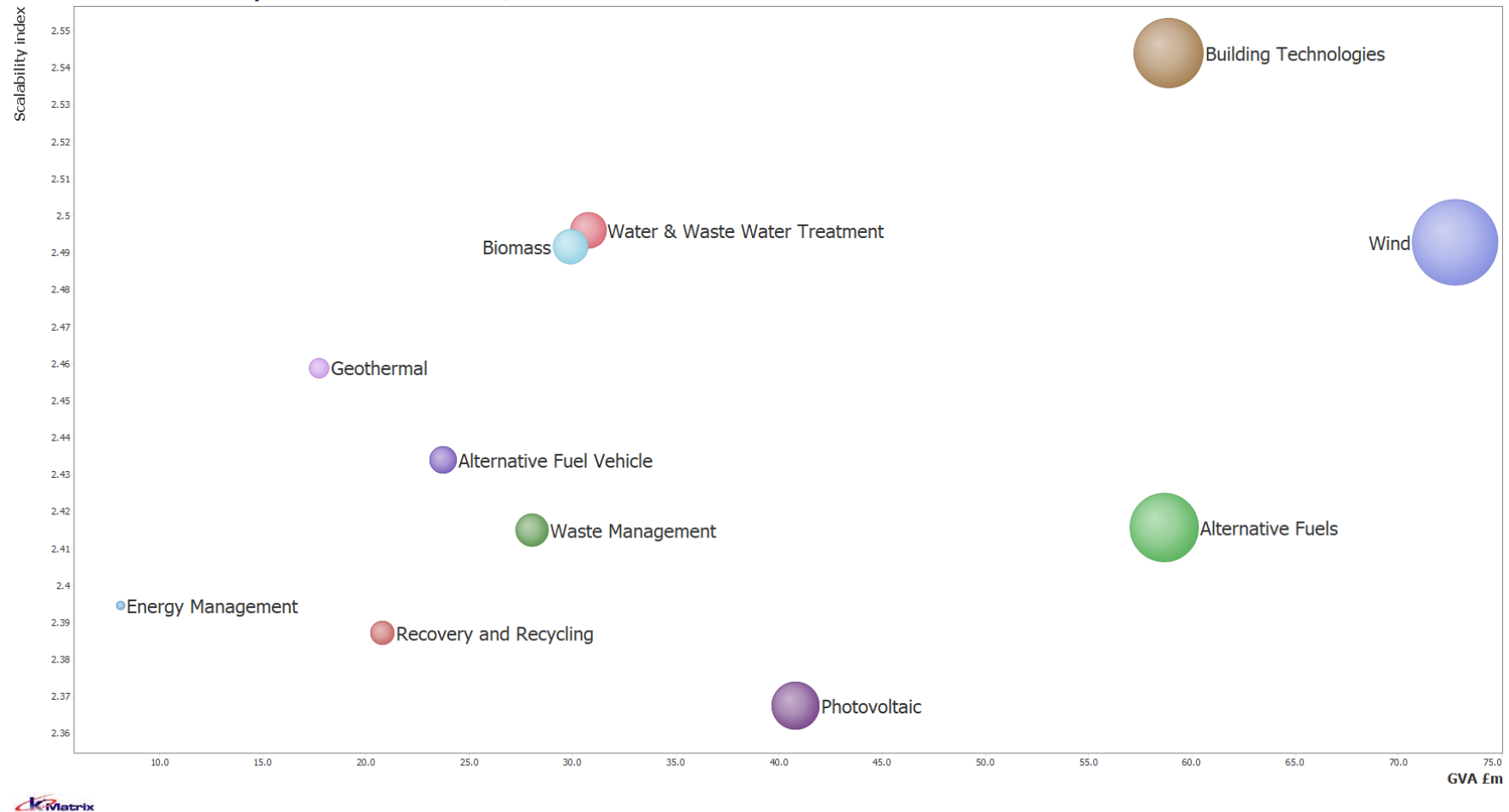
Lichfield – Scalability Index vs. GVA for 2019/20



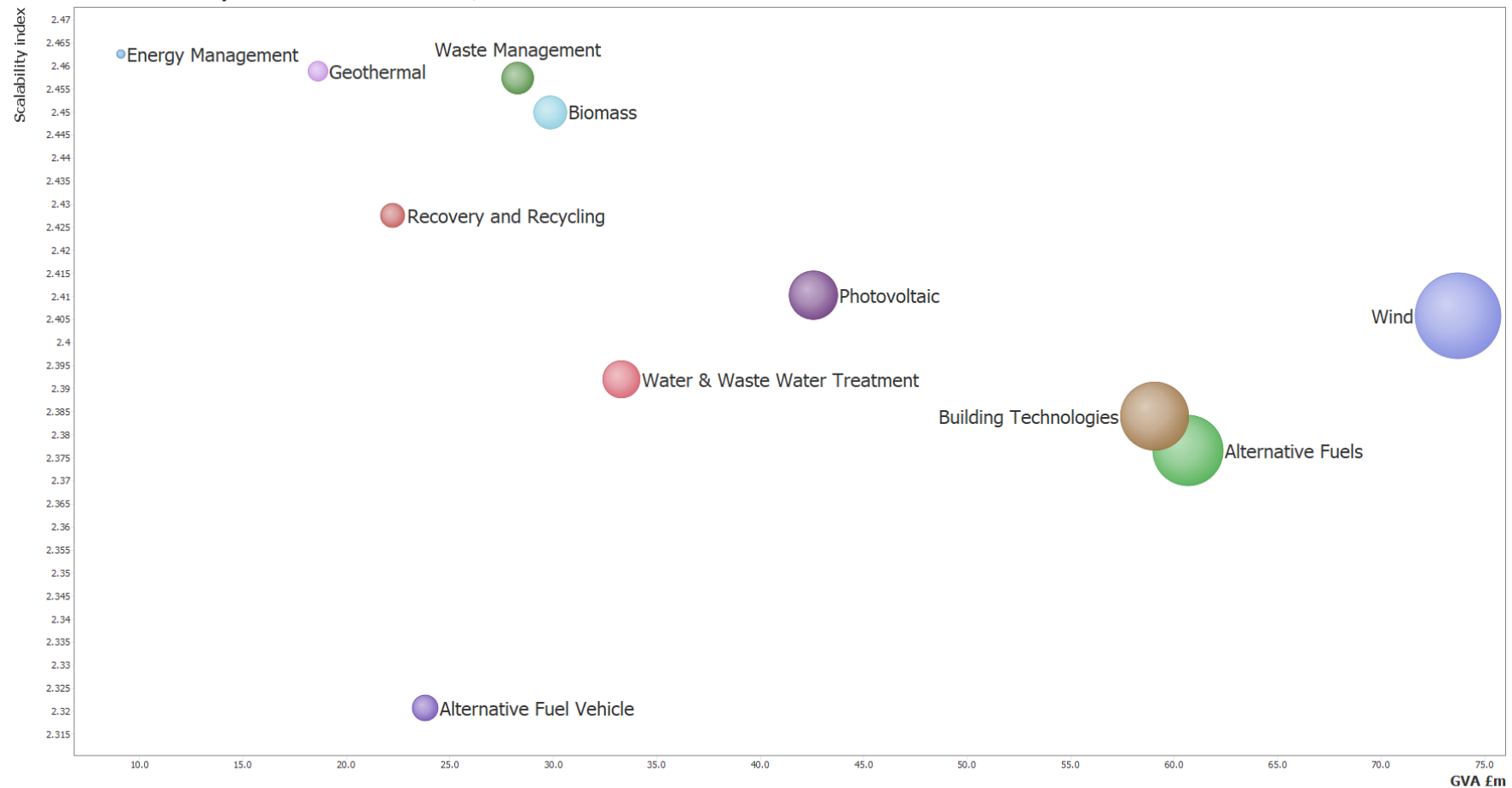
Lincoln – Scalability Index vs. GVA for 2019/20



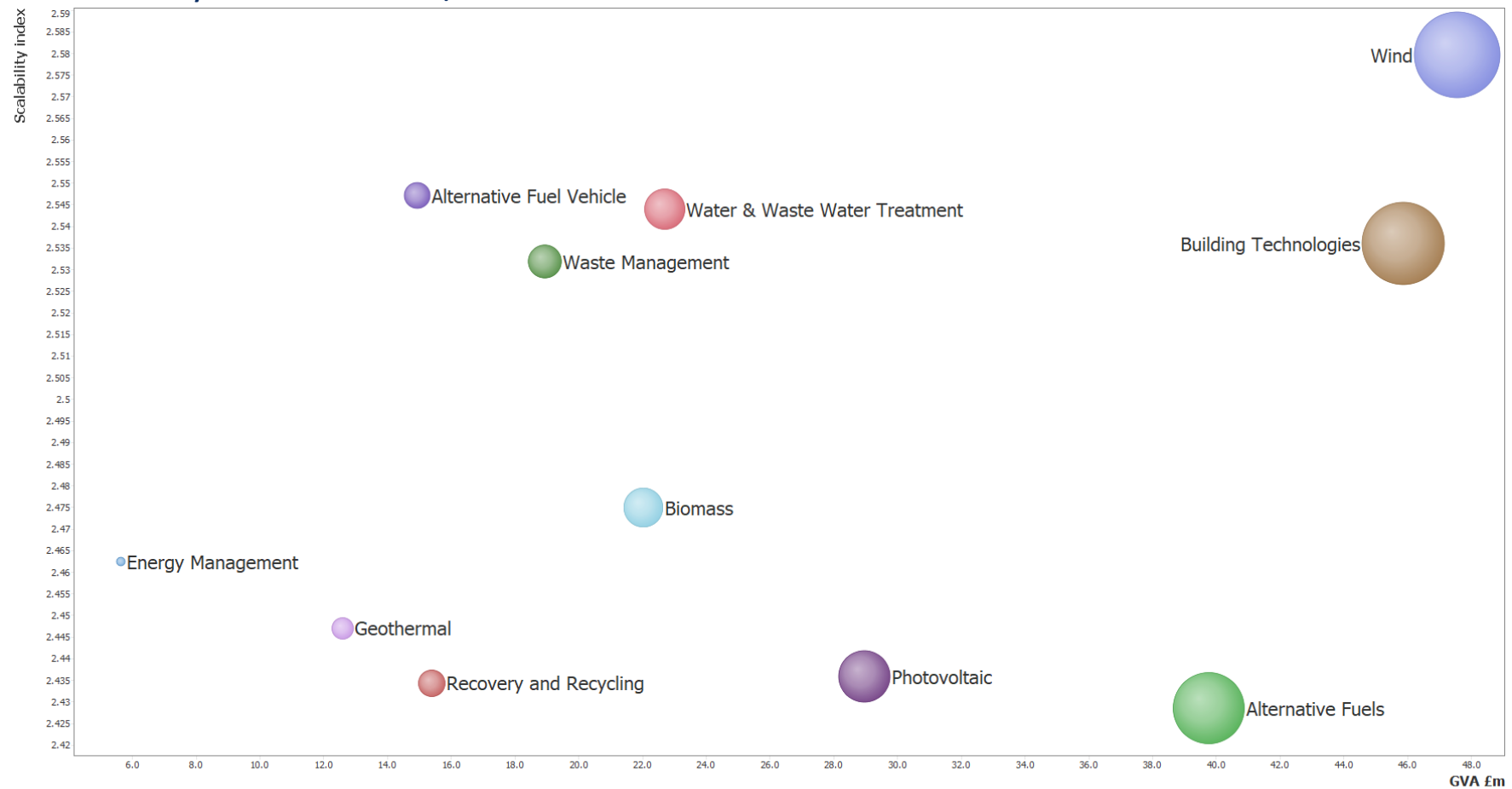
Malvern Hills – Scalability Index vs. GVA for 2019/20



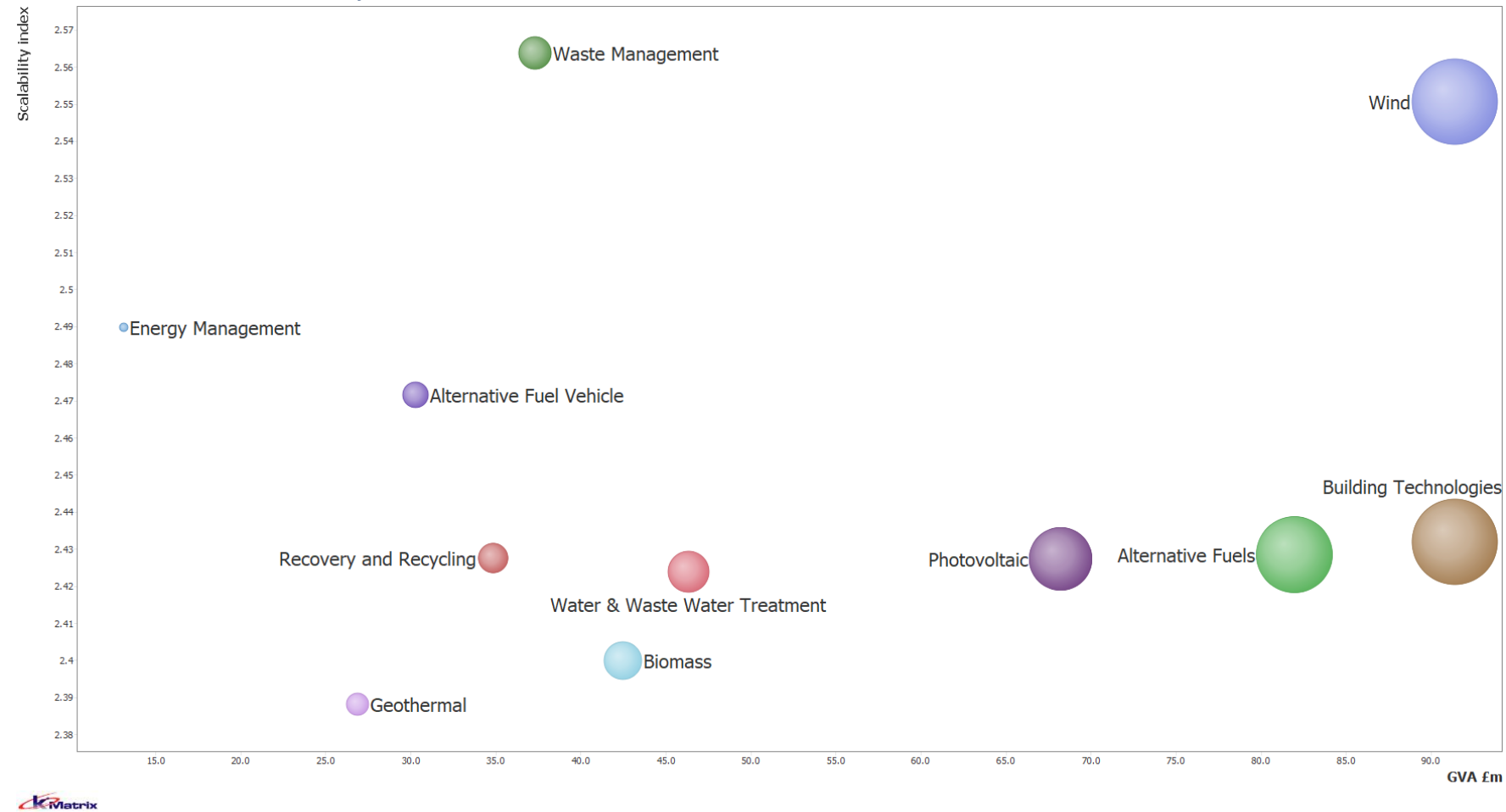
Mansfield – Scalability Index vs. GVA for 2019/20



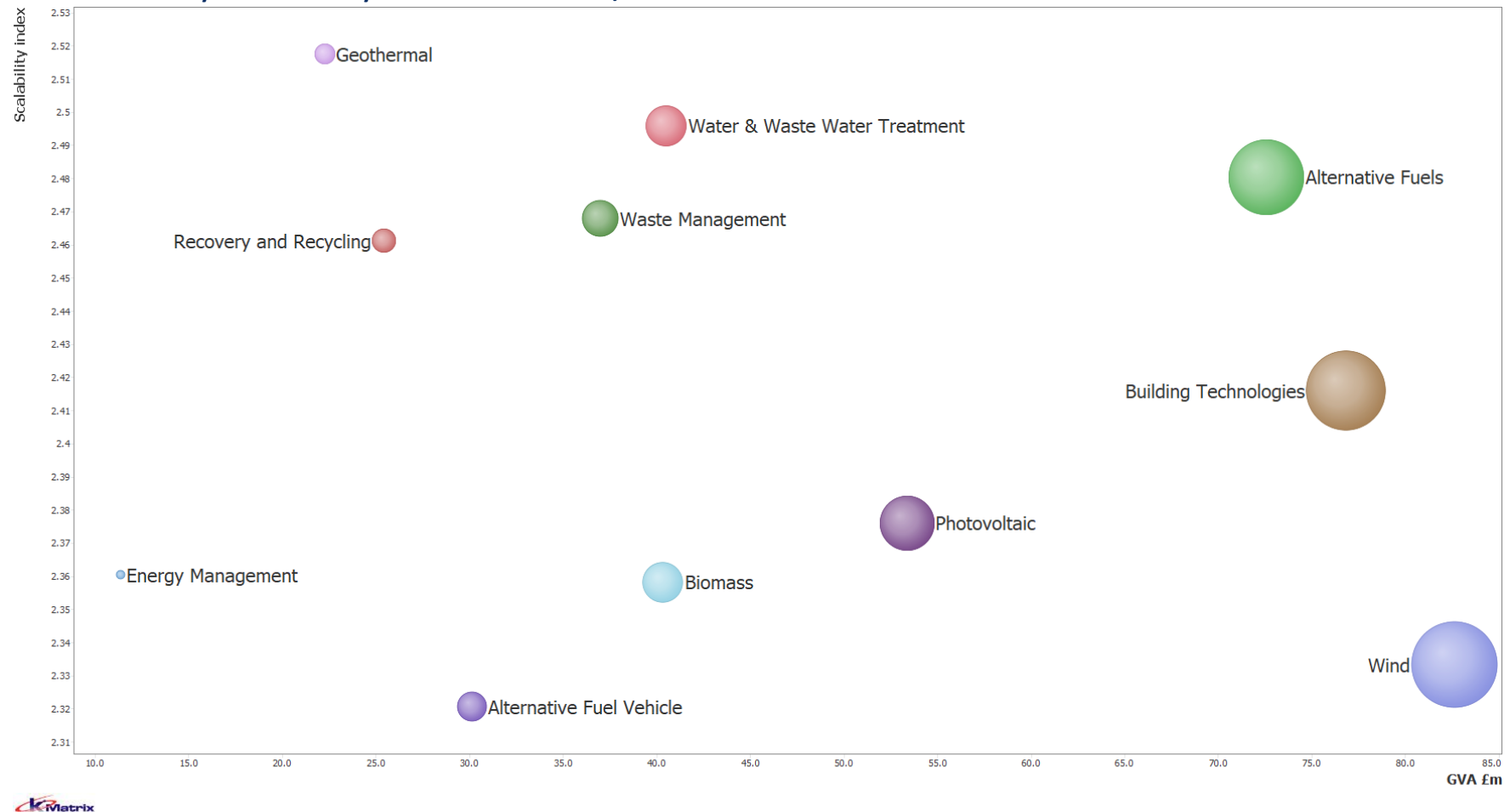
Melton – Scalability Index vs. GVA for 2019/20



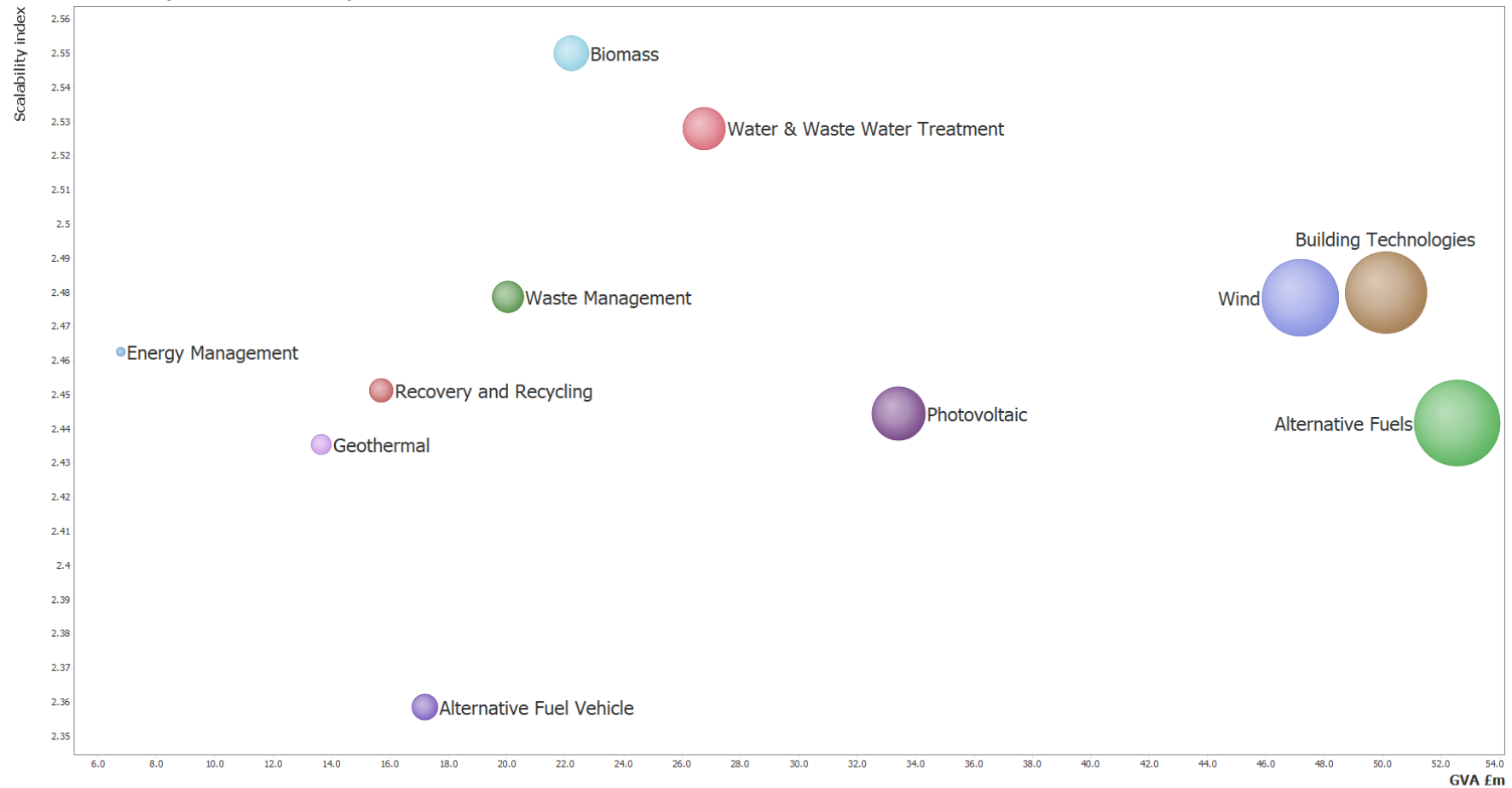
Newark and Sherwood – Scalability Index vs. GVA for 2019/20



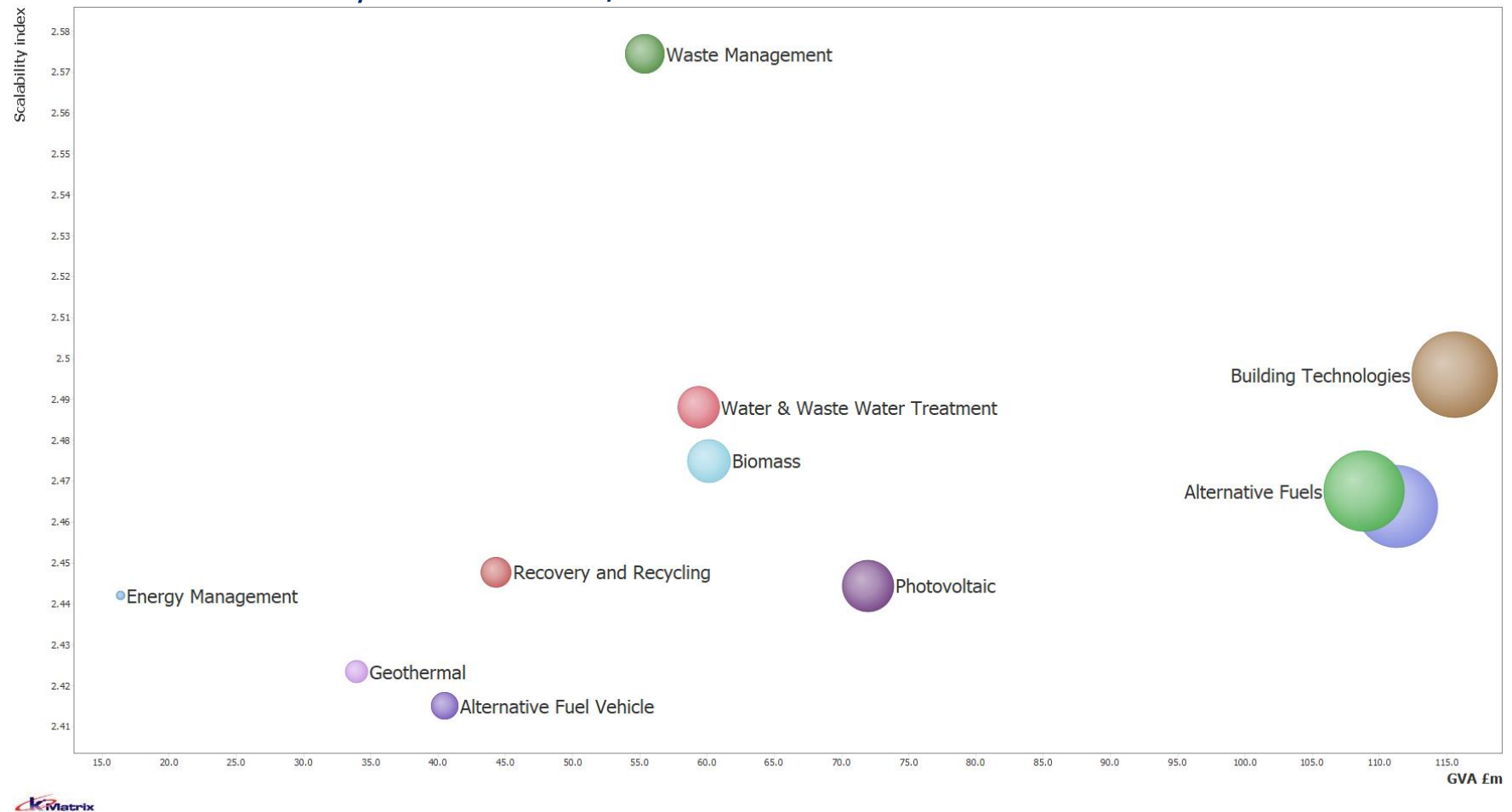
Newcastle- under-Lyme – Scalability Index vs. GVA for 2019/20



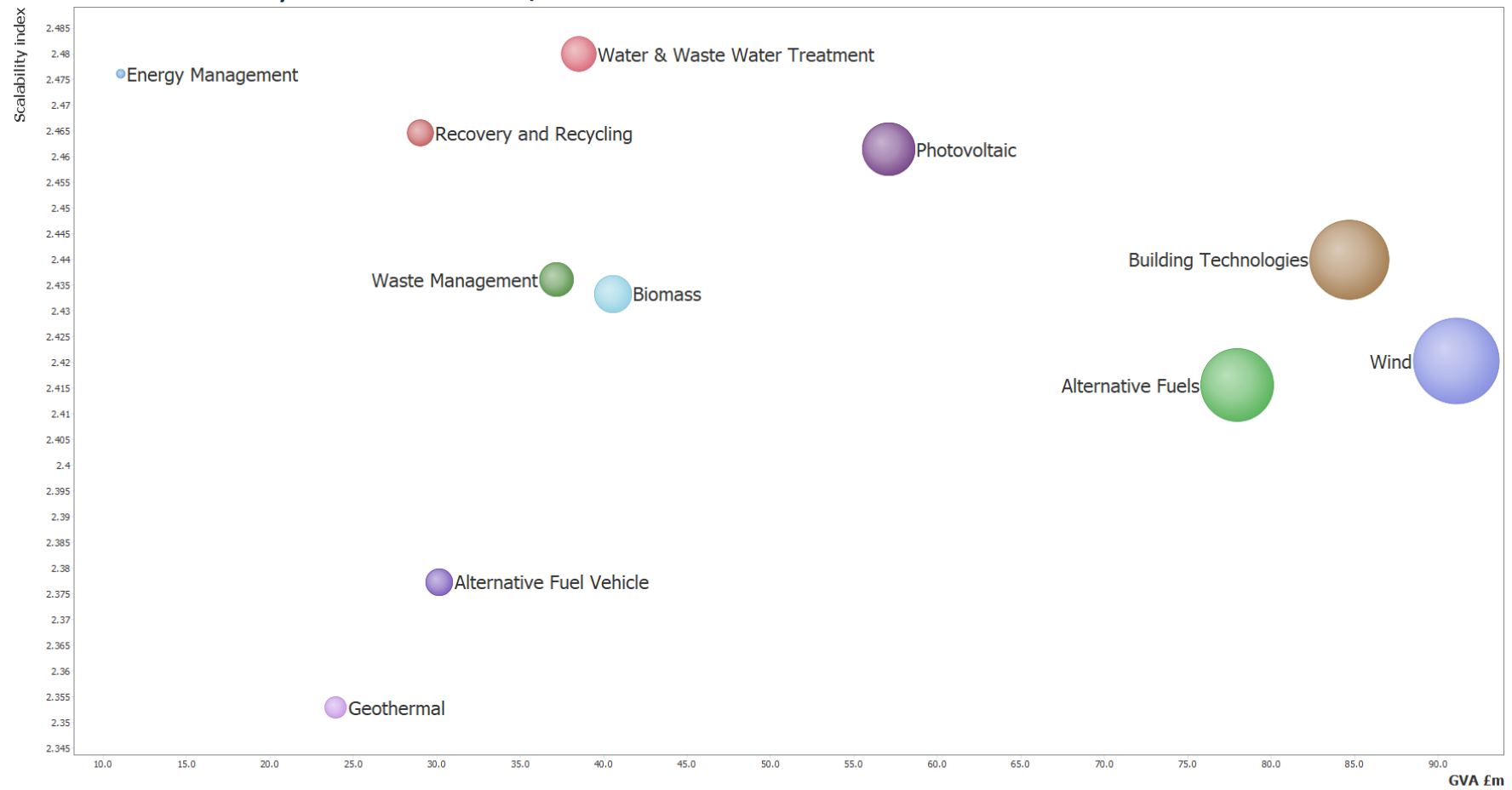
North East Derbyshire – Scalability Index vs. GVA for 2019/20



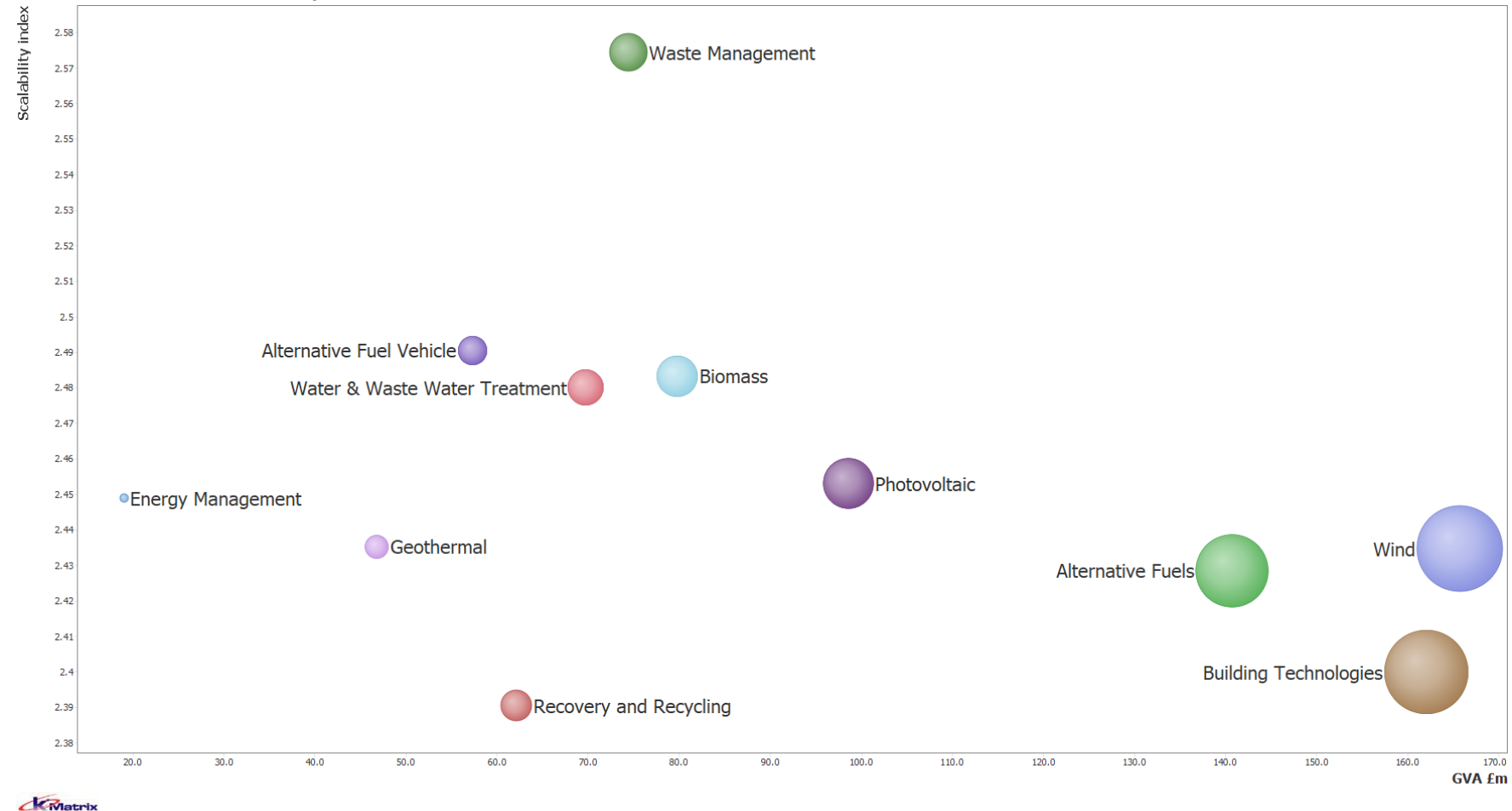
North East Lincolnshire – Scalability Index vs. GVA for 2019/20



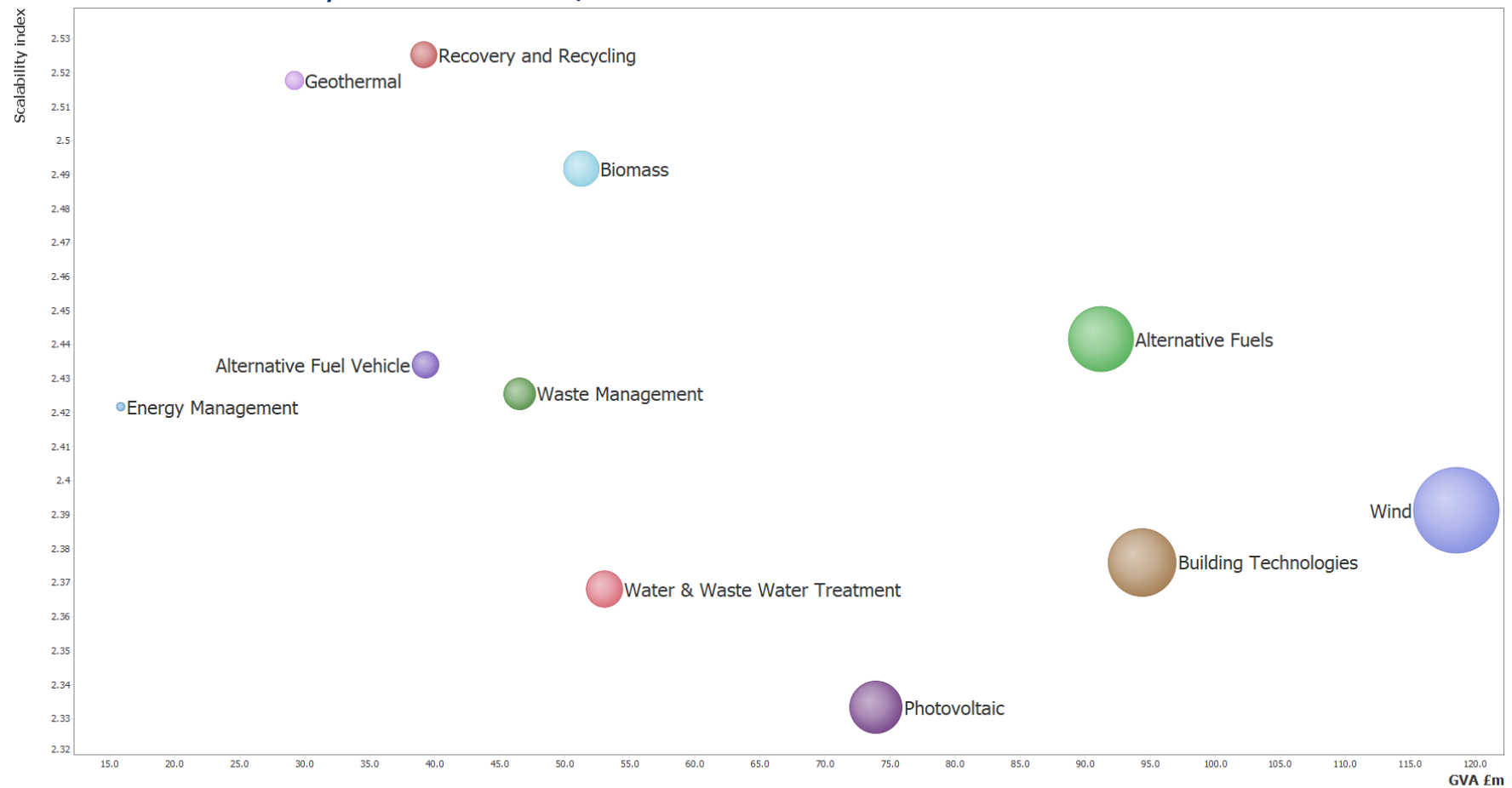
North Kesteven – Scalability Index vs. GVA for 2019/20



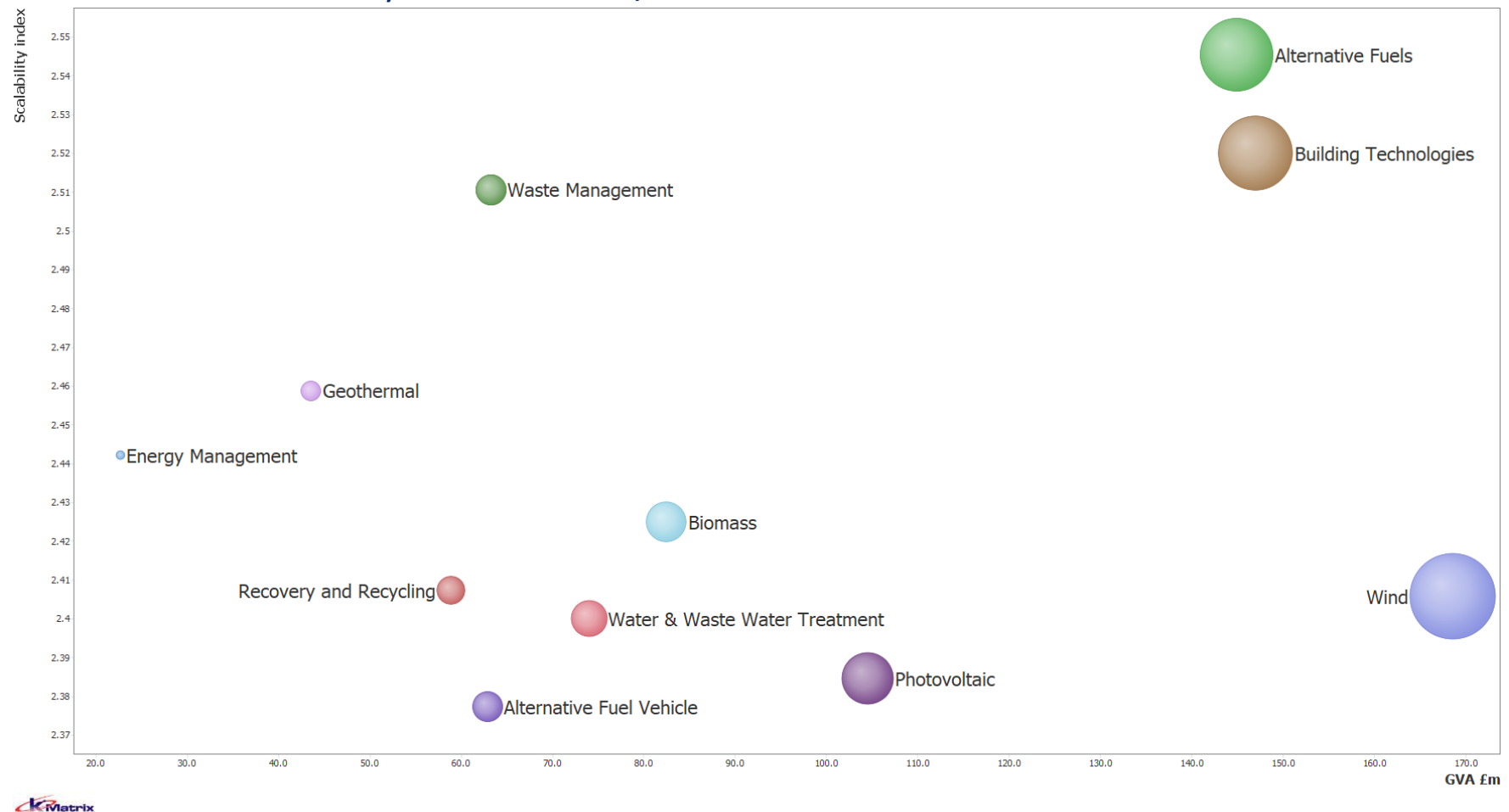
North Lincolnshire – Scalability Index vs. GVA for 2019/20



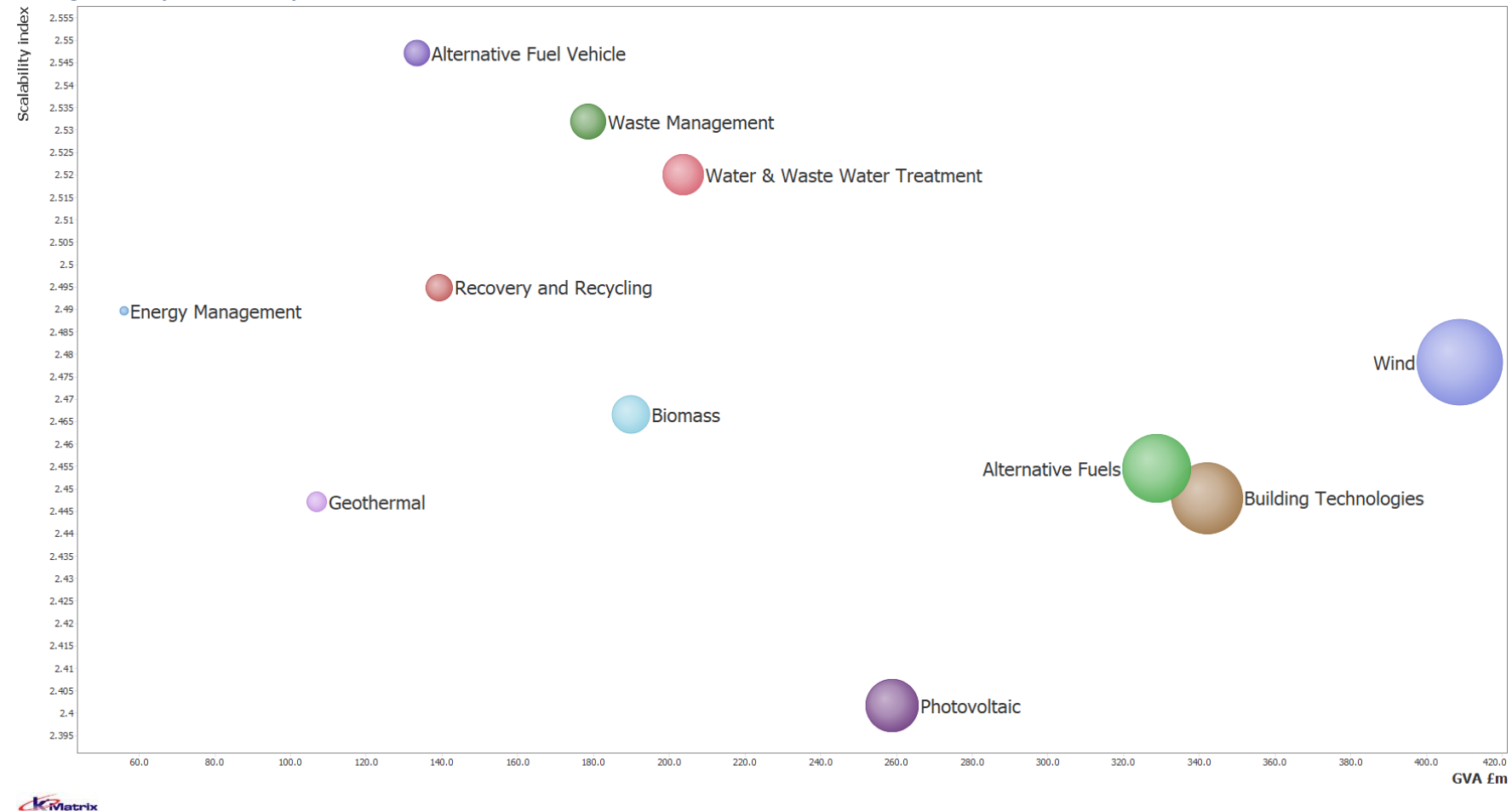
North Warwickshire – Scalability Index vs. GVA for 2019/20



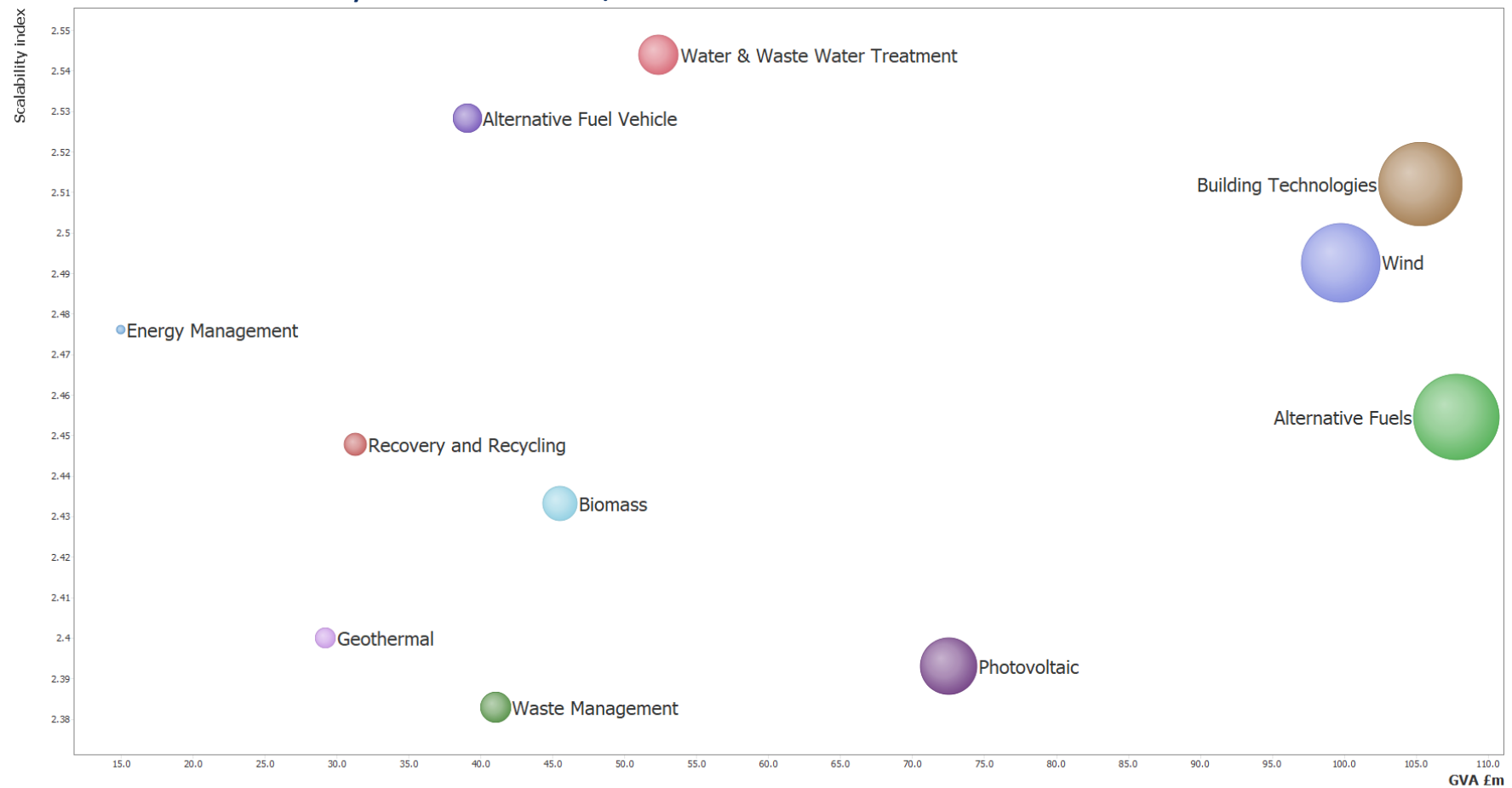
North West Leicestershire – Scalability Index vs. GVA for 2019/20



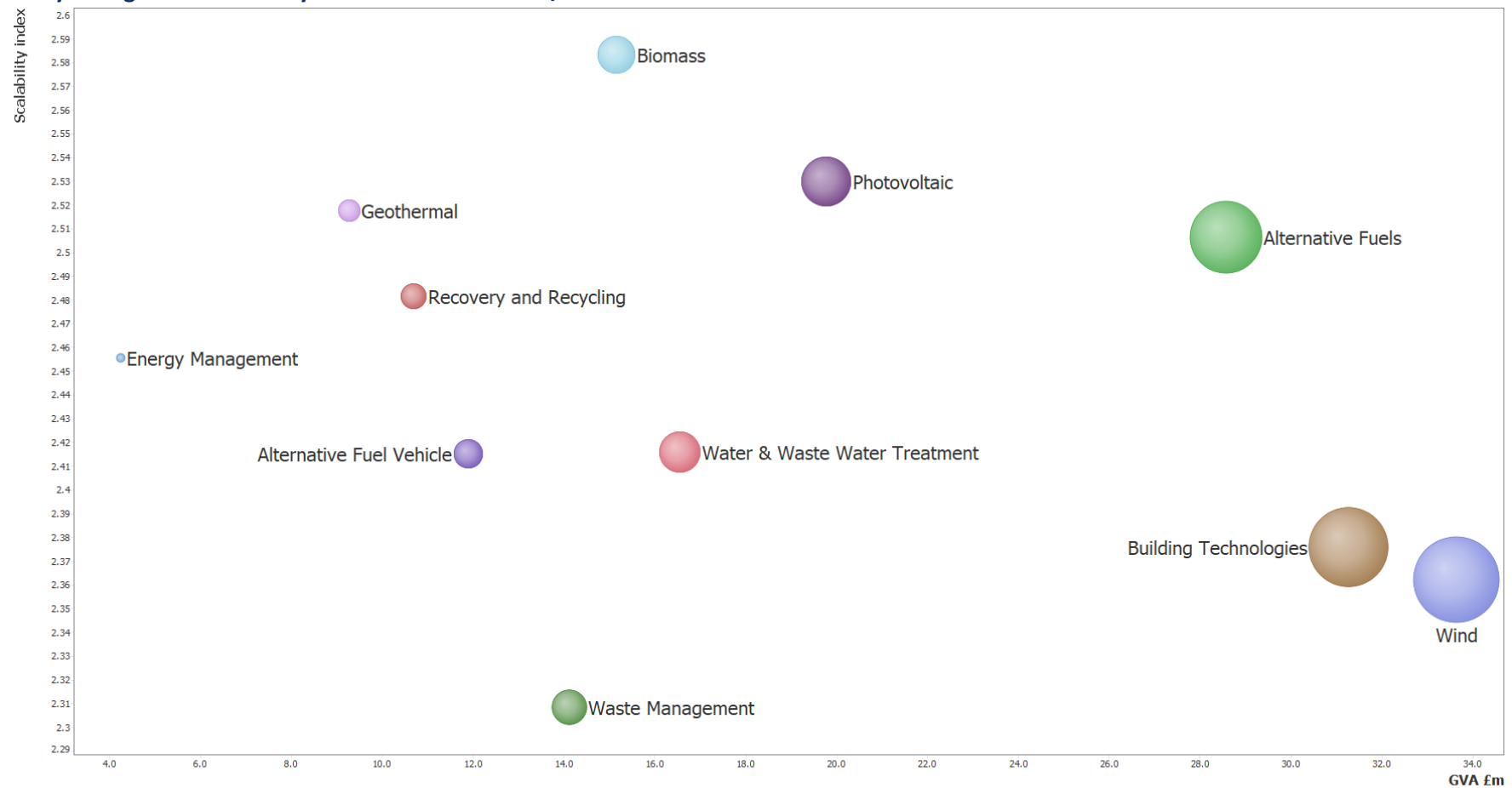
Nottingham City – Scalability Index vs. GVA for 2019/20



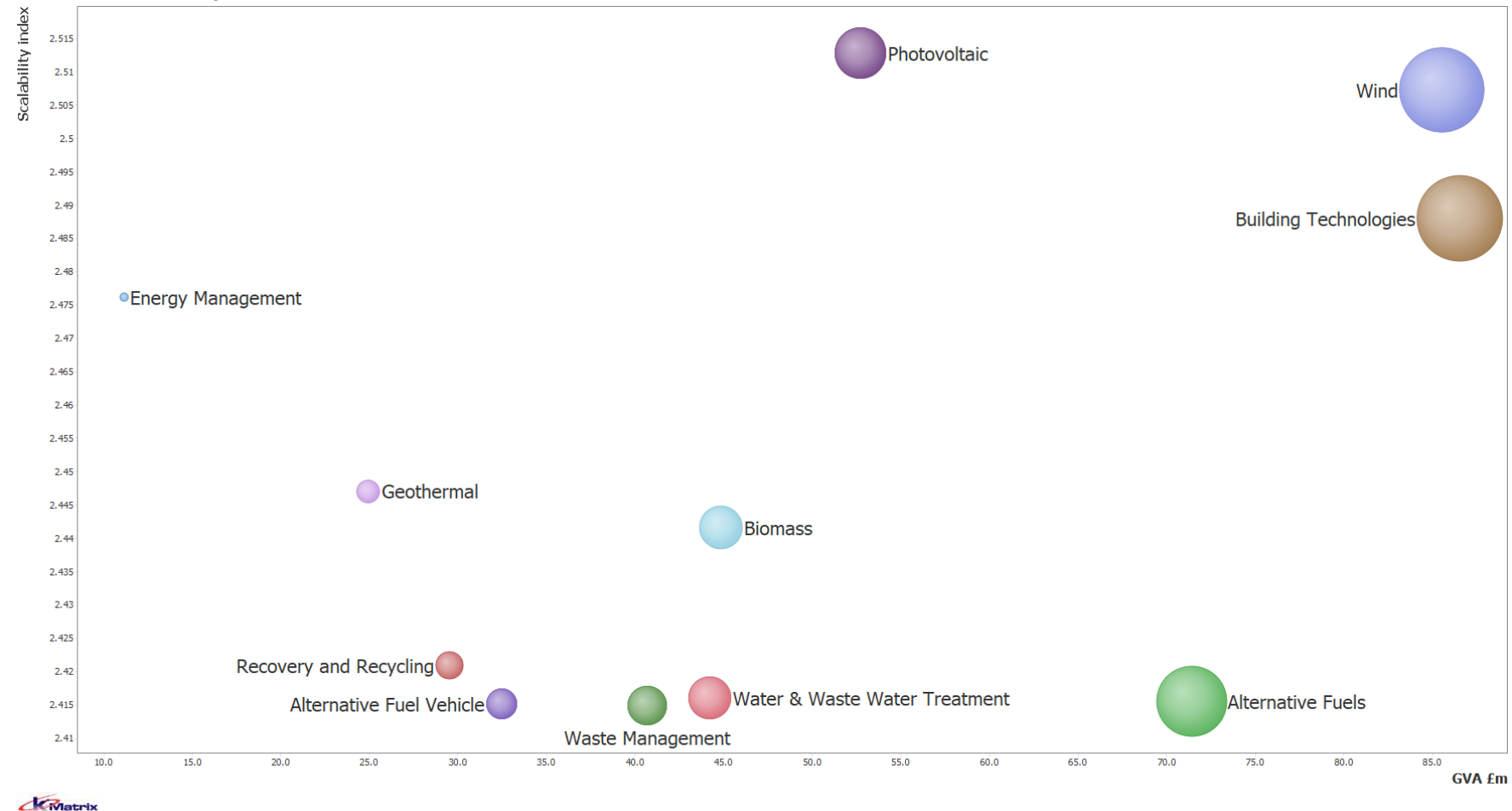
Nuneaton & Bedworth – Scalability Index vs. GVA for 2019/20



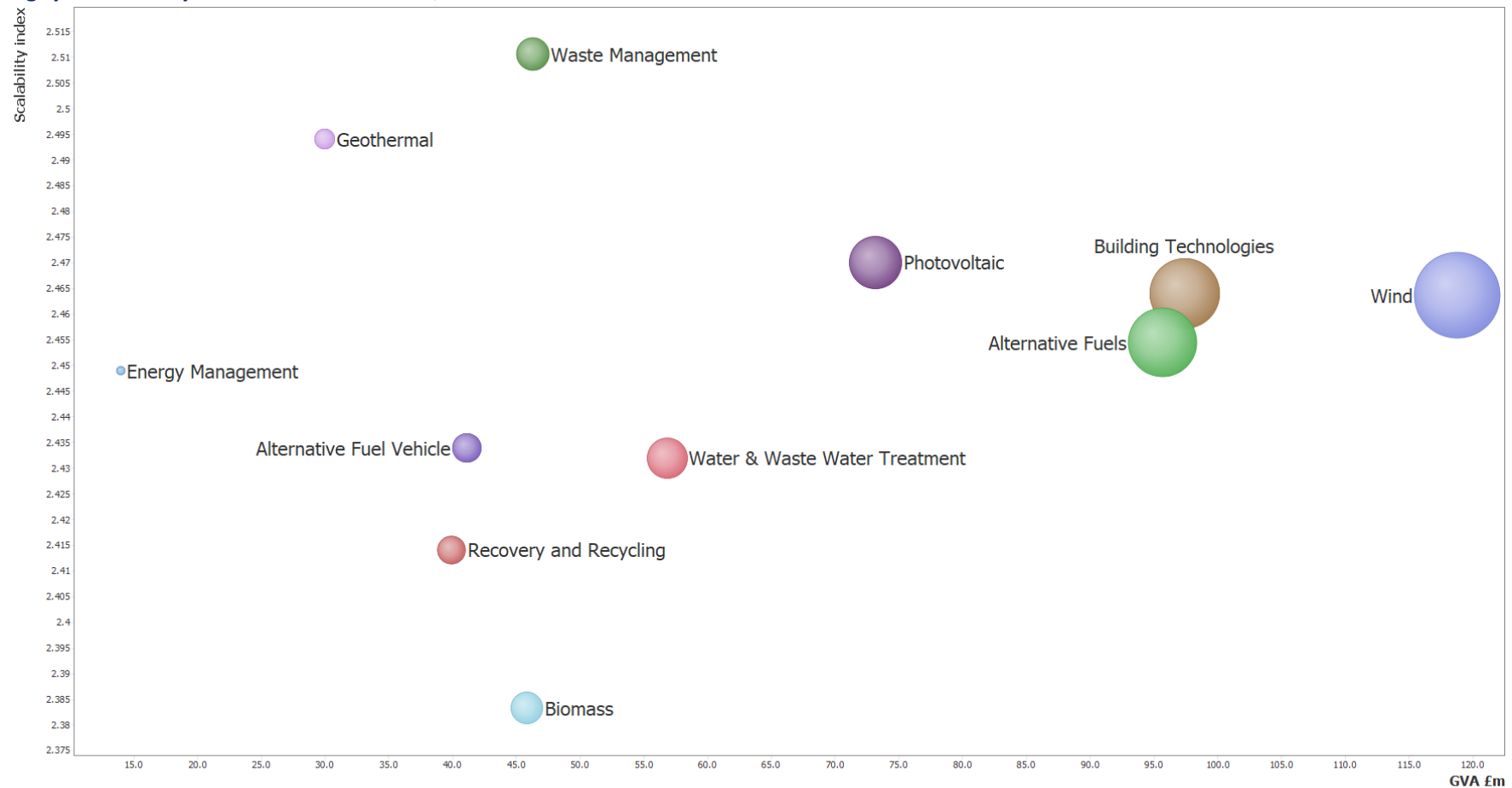
Oadby & Wigston – Scalability Index vs. GVA for 2019/20



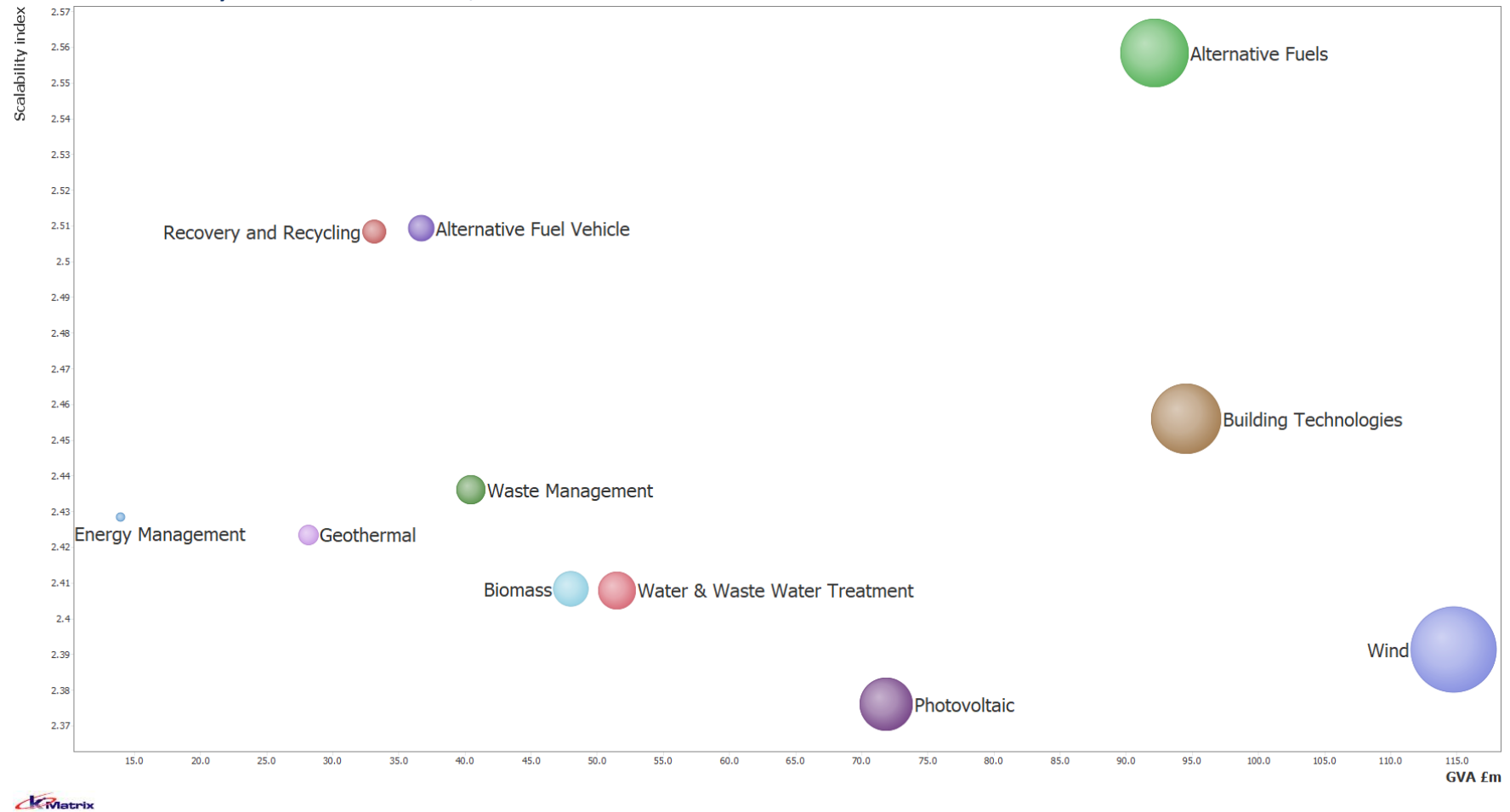
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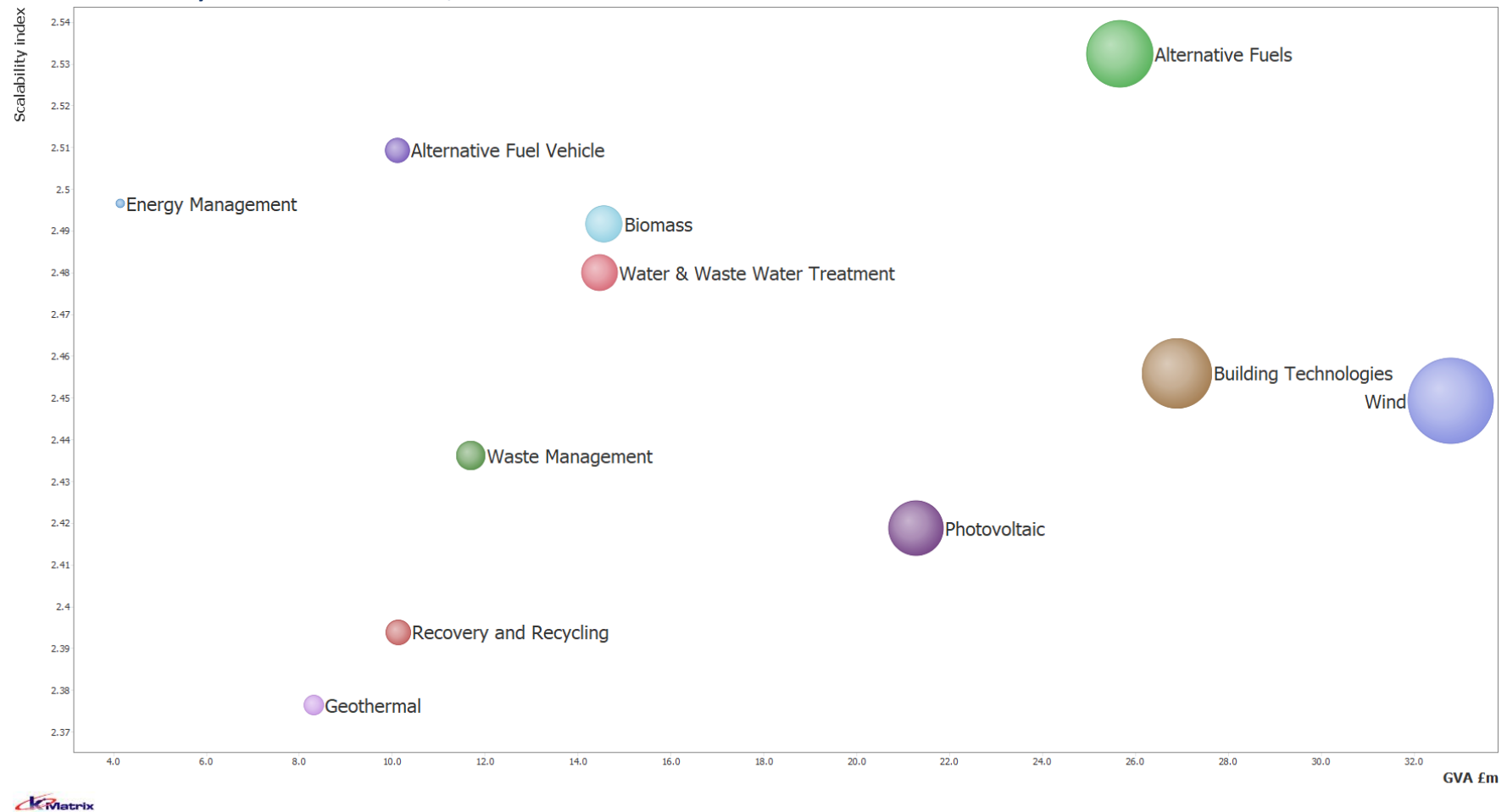
Rugby – Scalability Index vs. GVA for 2019/20



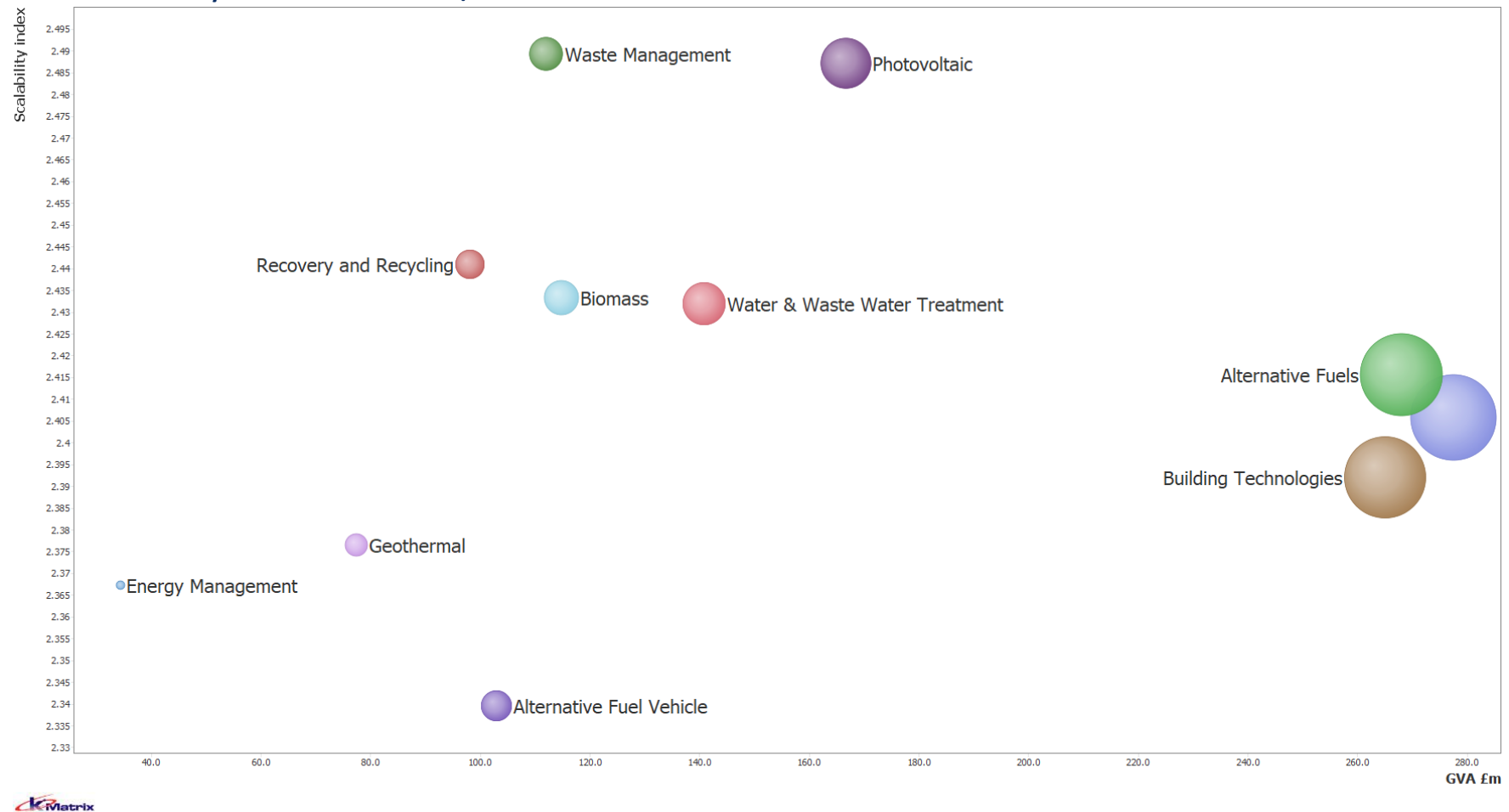
Rushcliffe – Scalability Index vs. GVA for 2019/20



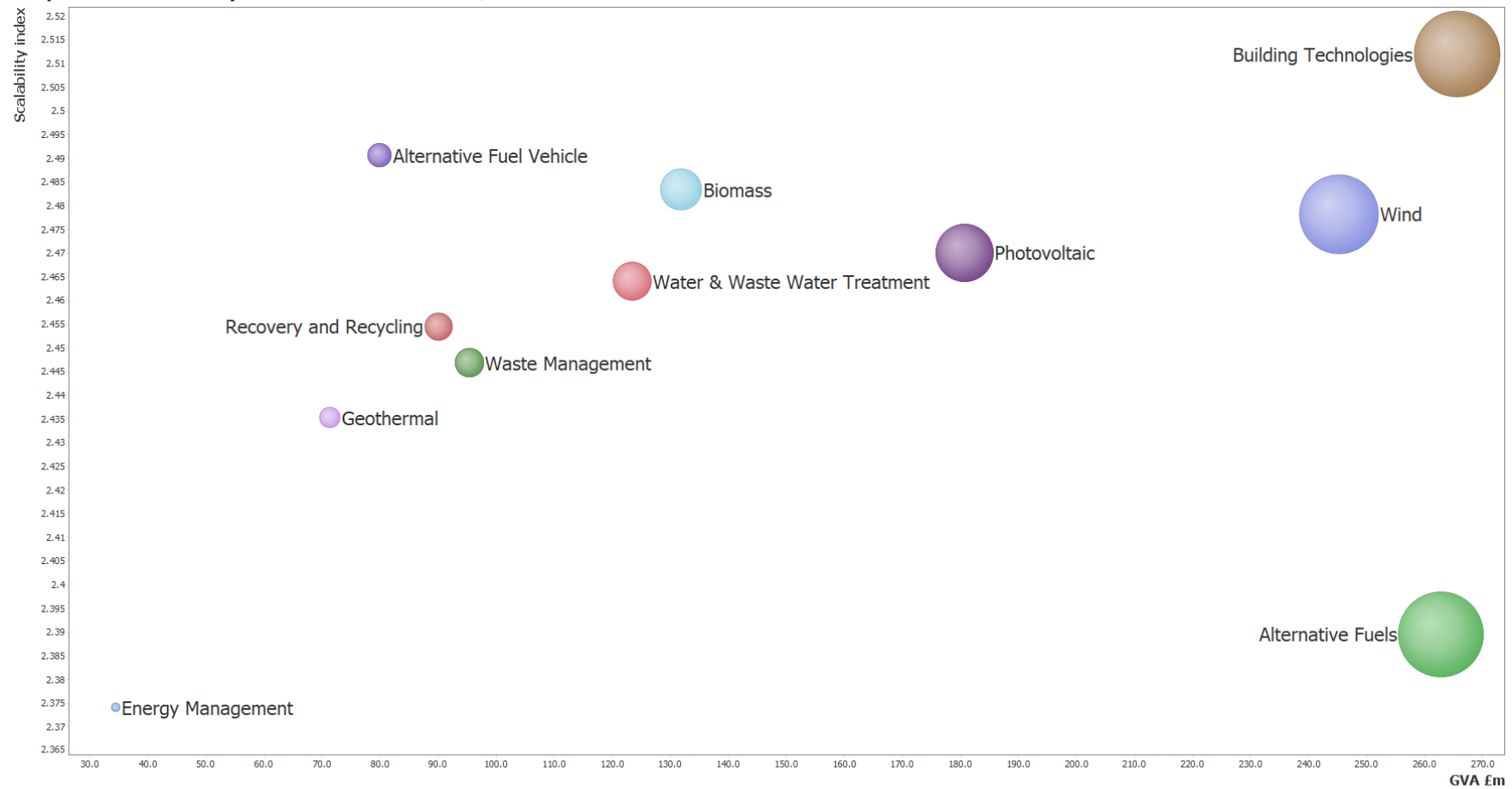
Rutland – Scalability Index vs. GVA for 2019/20



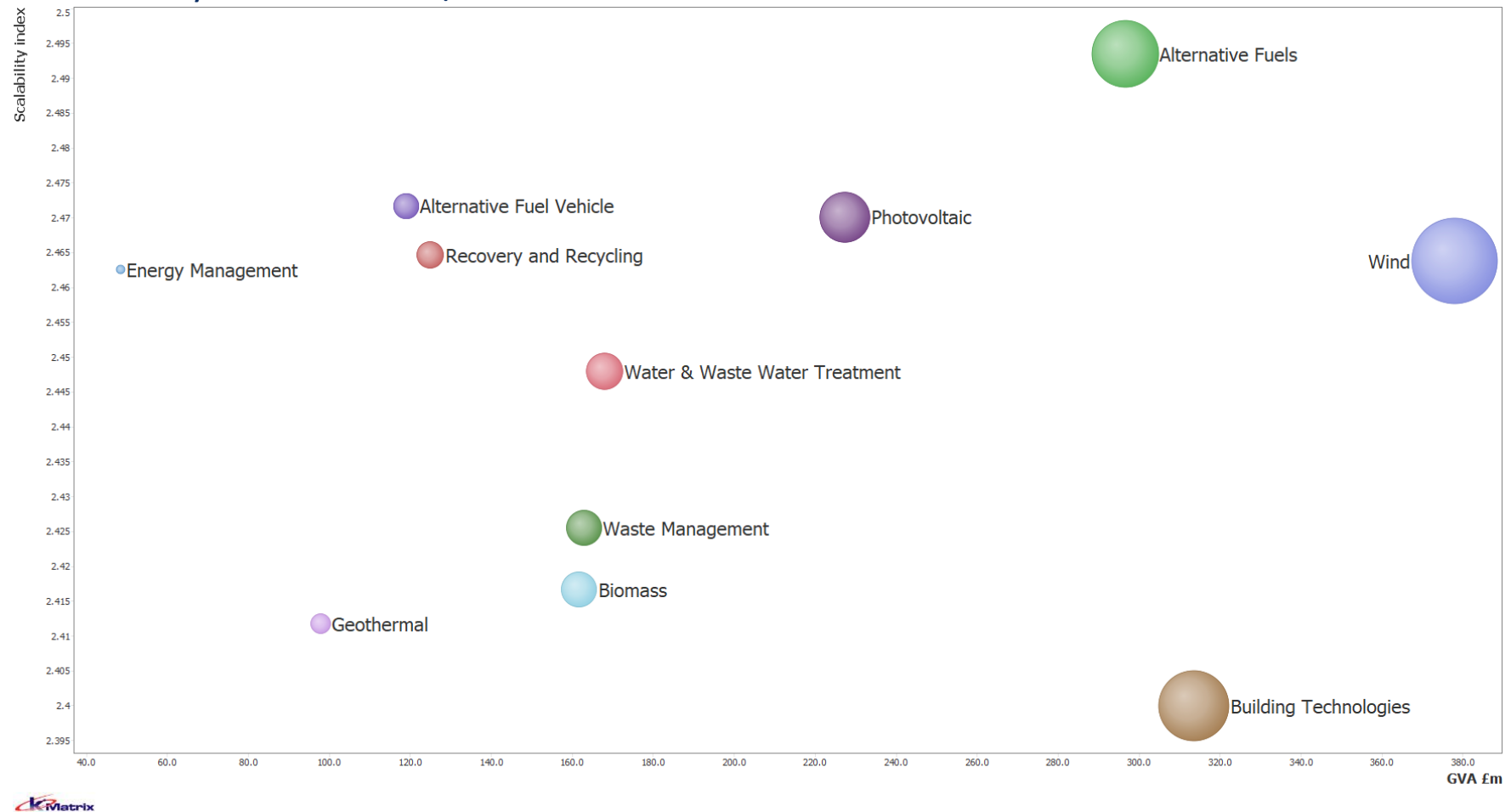
Sandwell – Scalability Index vs. GVA for 2019/20



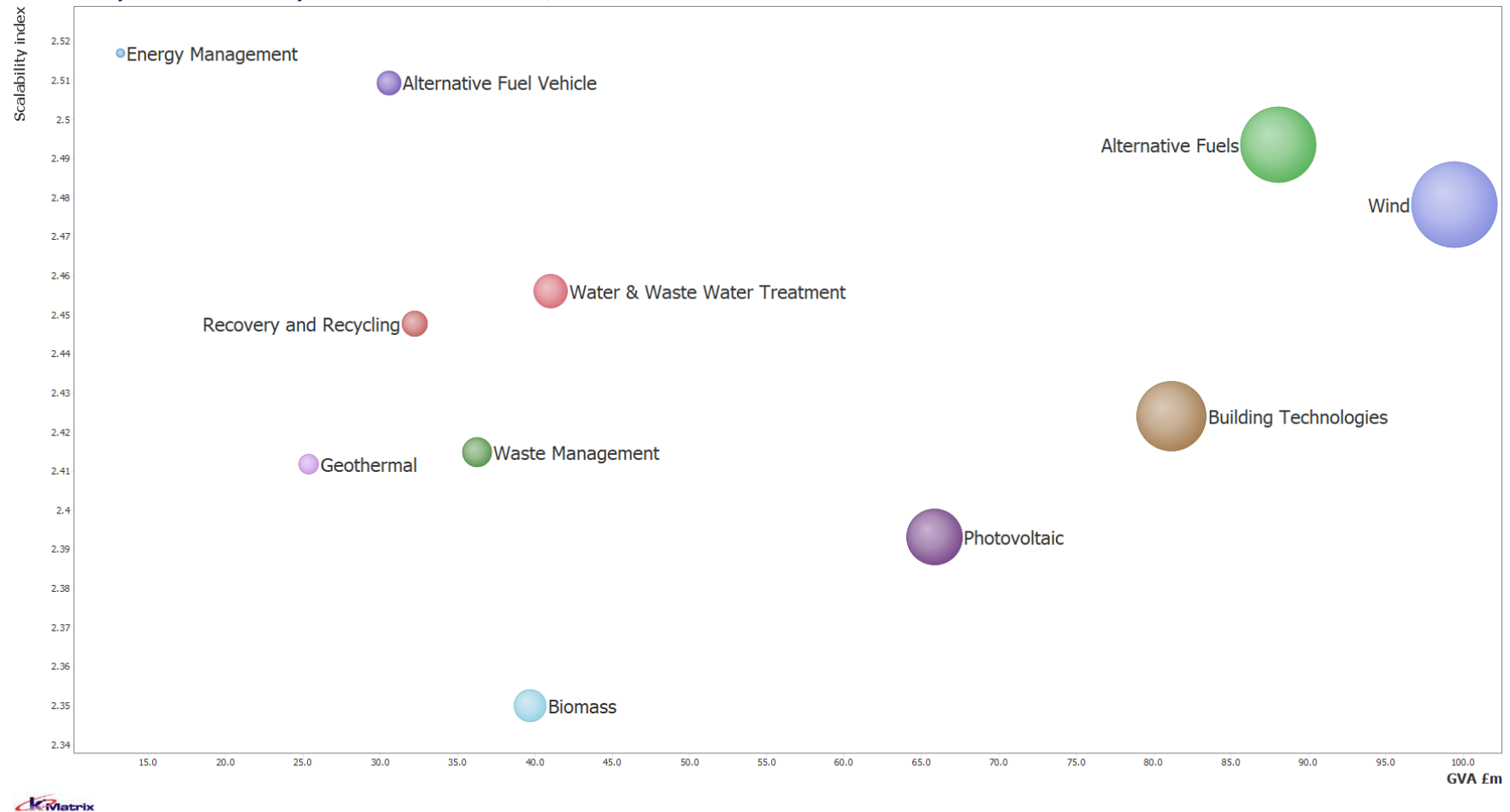
Shropshire – Scalability Index vs. GVA for 2019/20



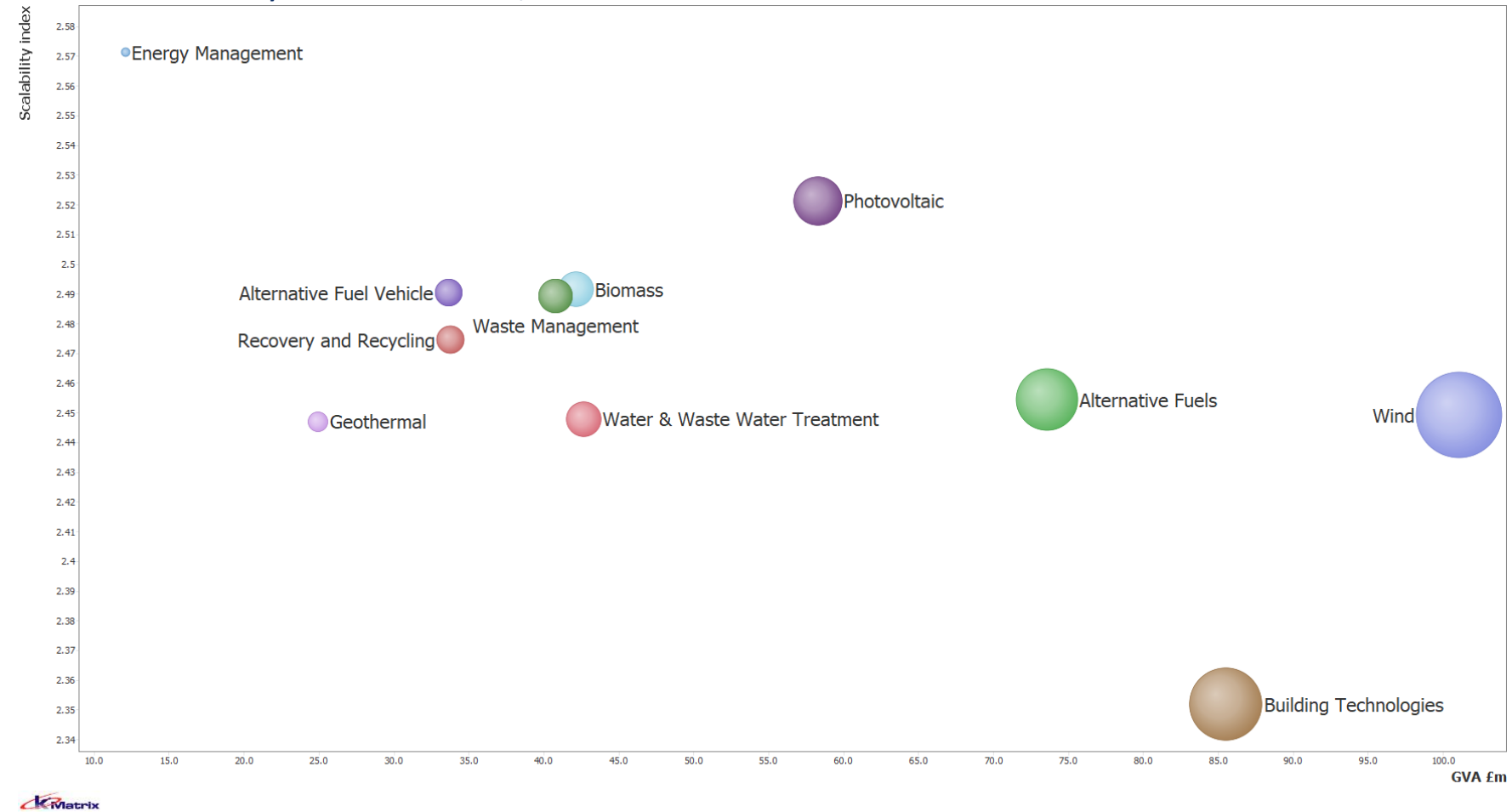
Solihull – Scalability Index vs. GVA for 2019/20



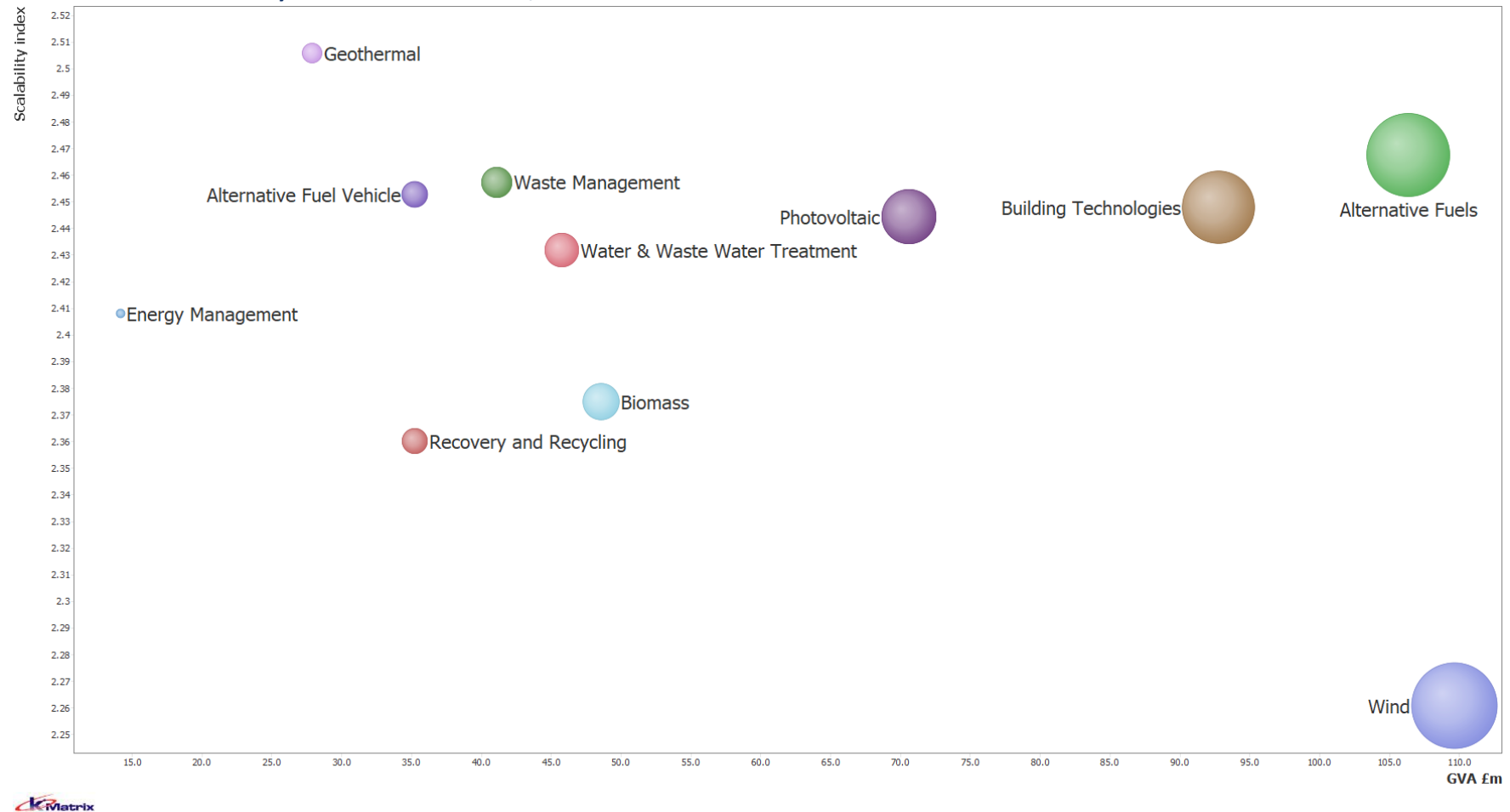
South Derbyshire – Scalability Index vs. GVA for 2019/20



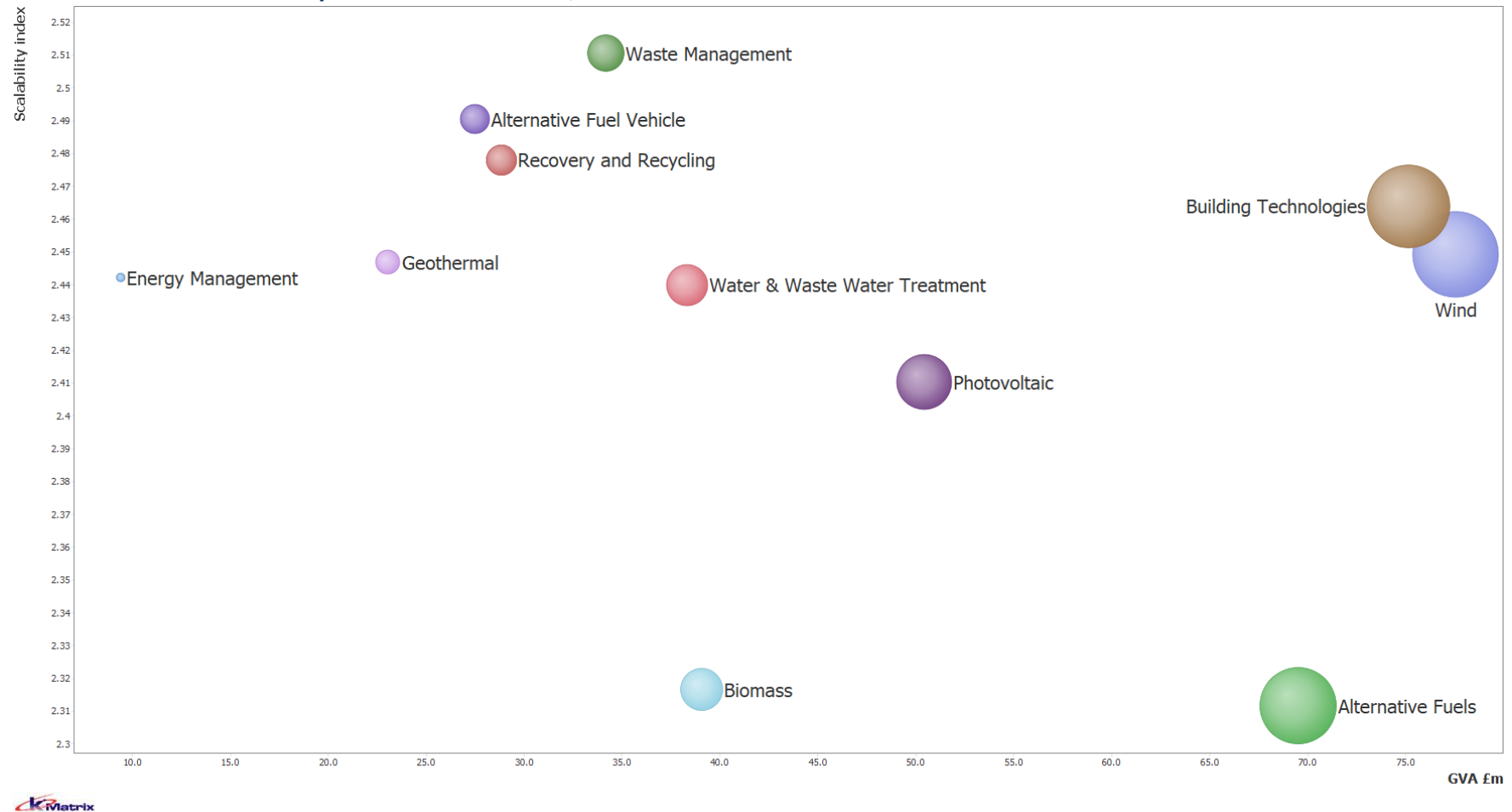
South Holland – Scalability Index vs. GVA for 2019/20



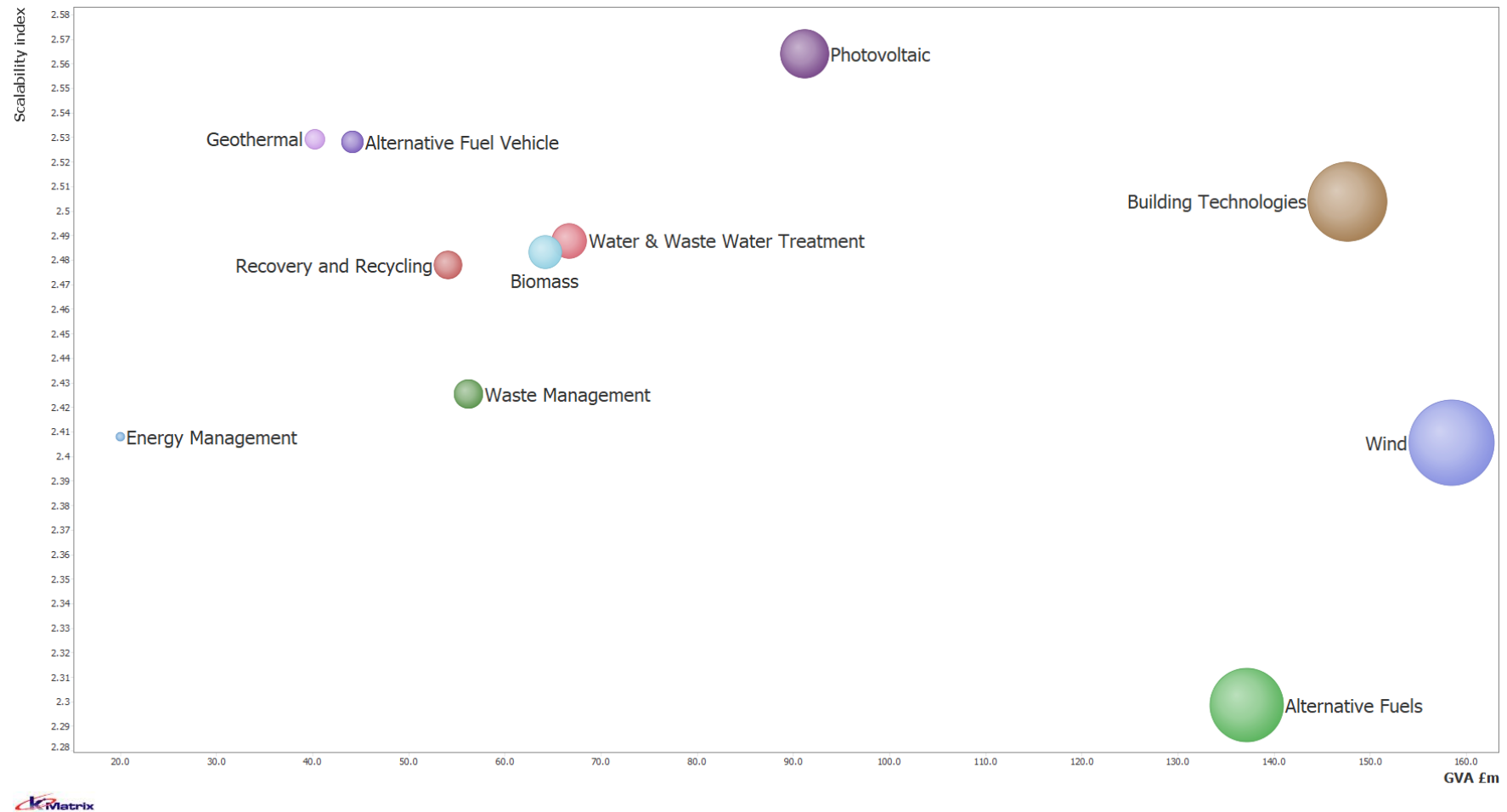
South Kesteven – Scalability Index vs. GVA for 2019/20



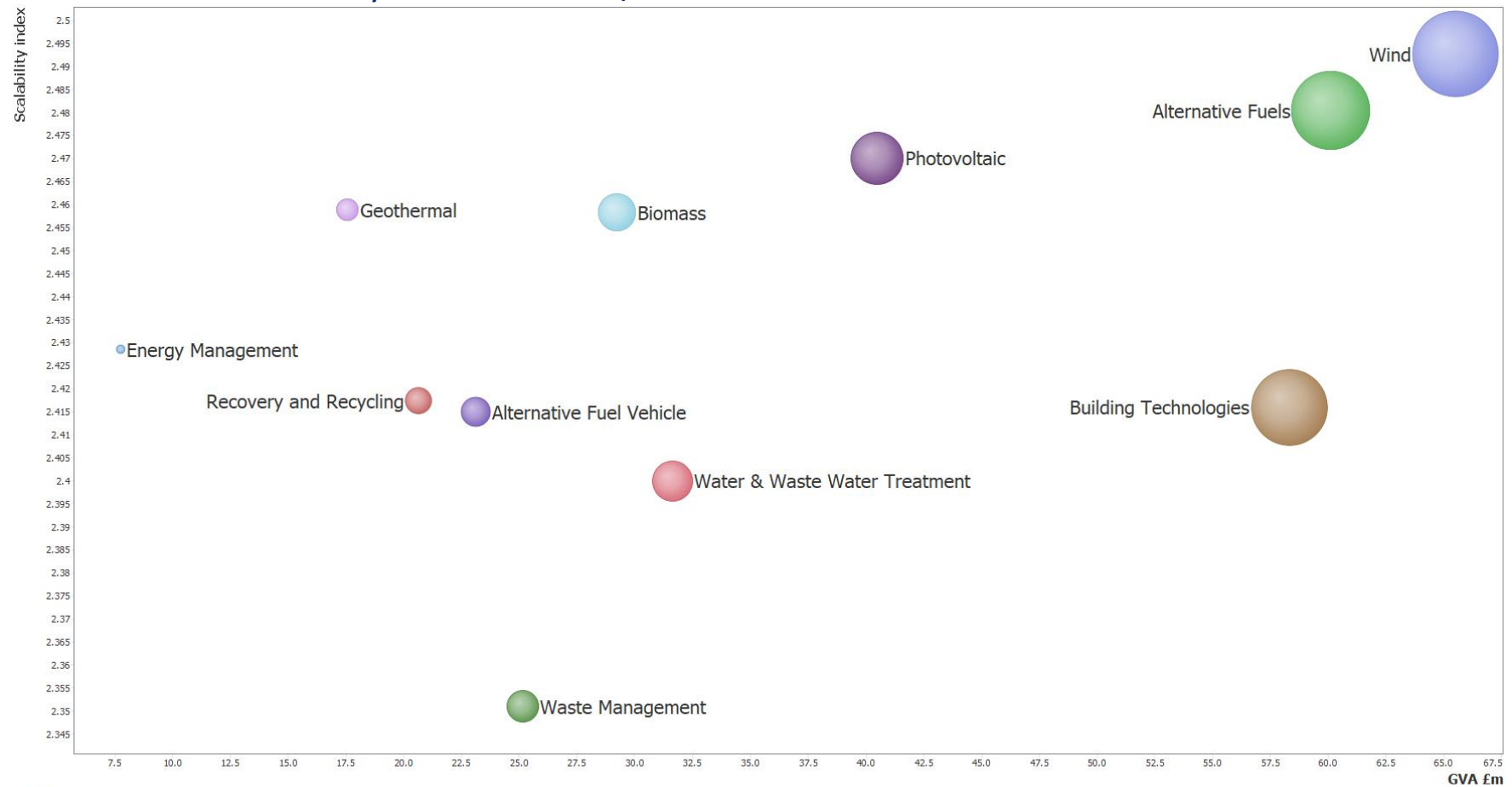
South Staffordshire – Scalability Index vs. GVA for 2019/20



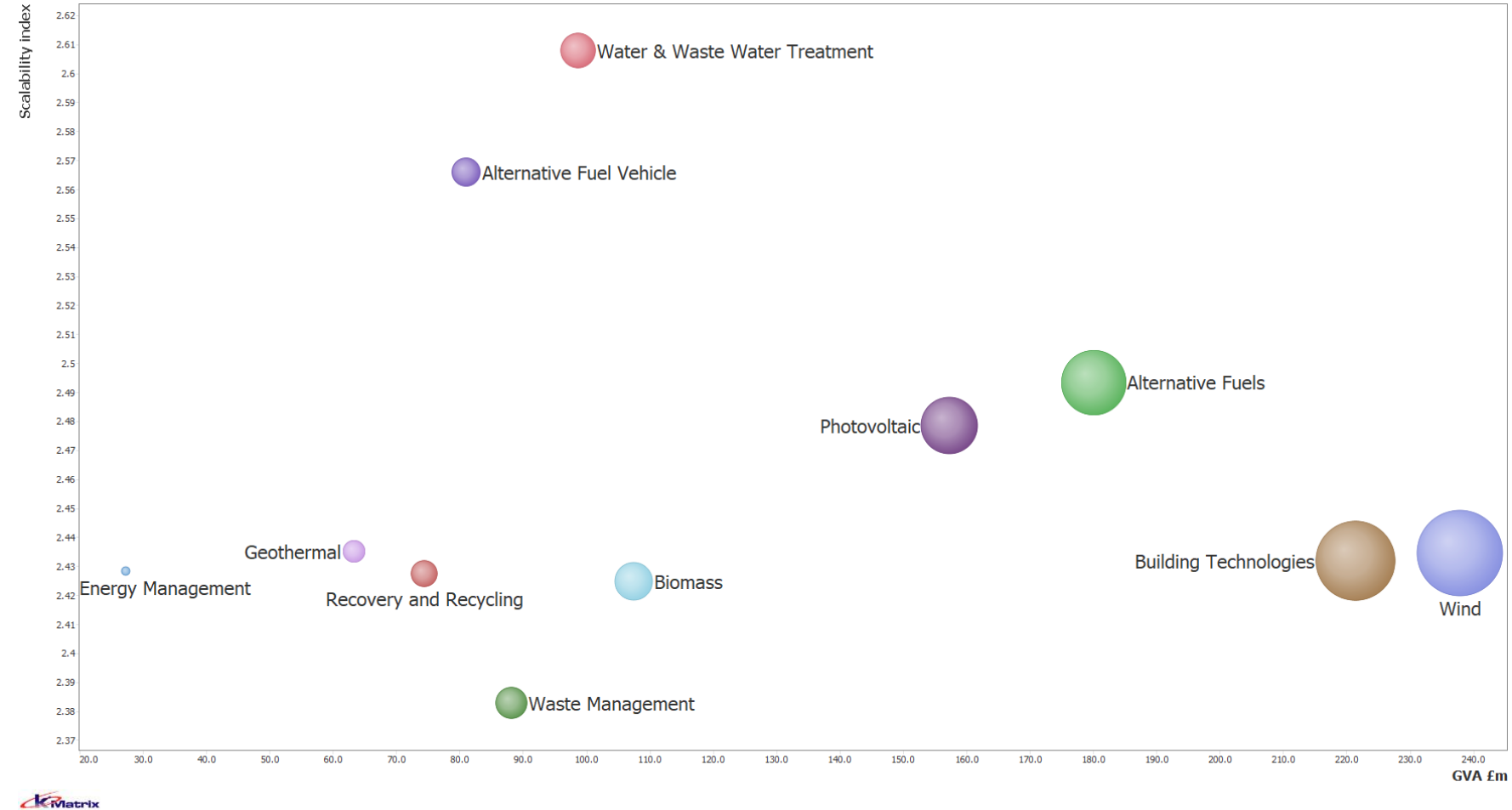
Stafford – Scalability Index vs. GVA for 2019/20



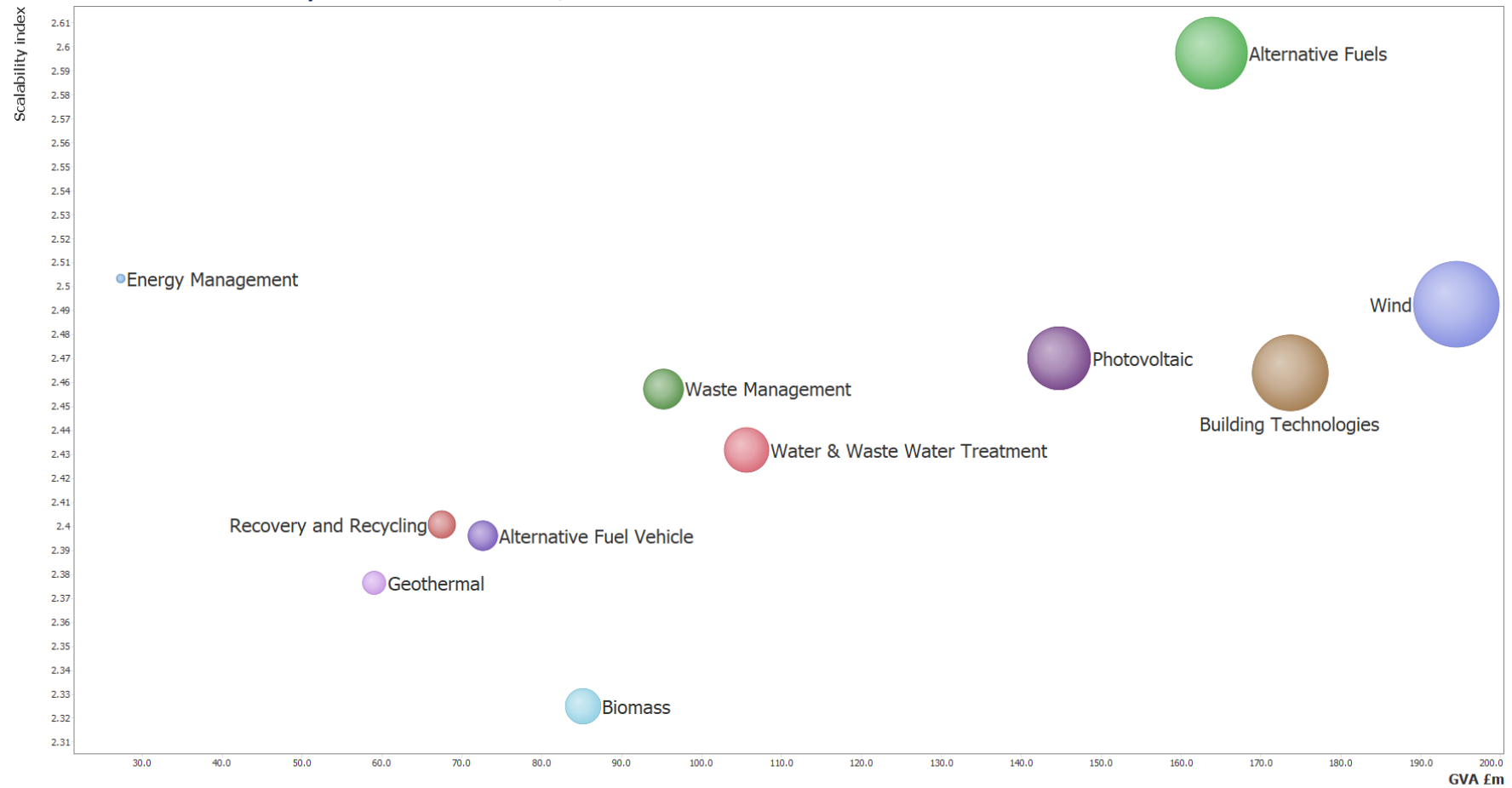
Staffordshire Moorlands – Scalability Index vs. GVA for 2019/20



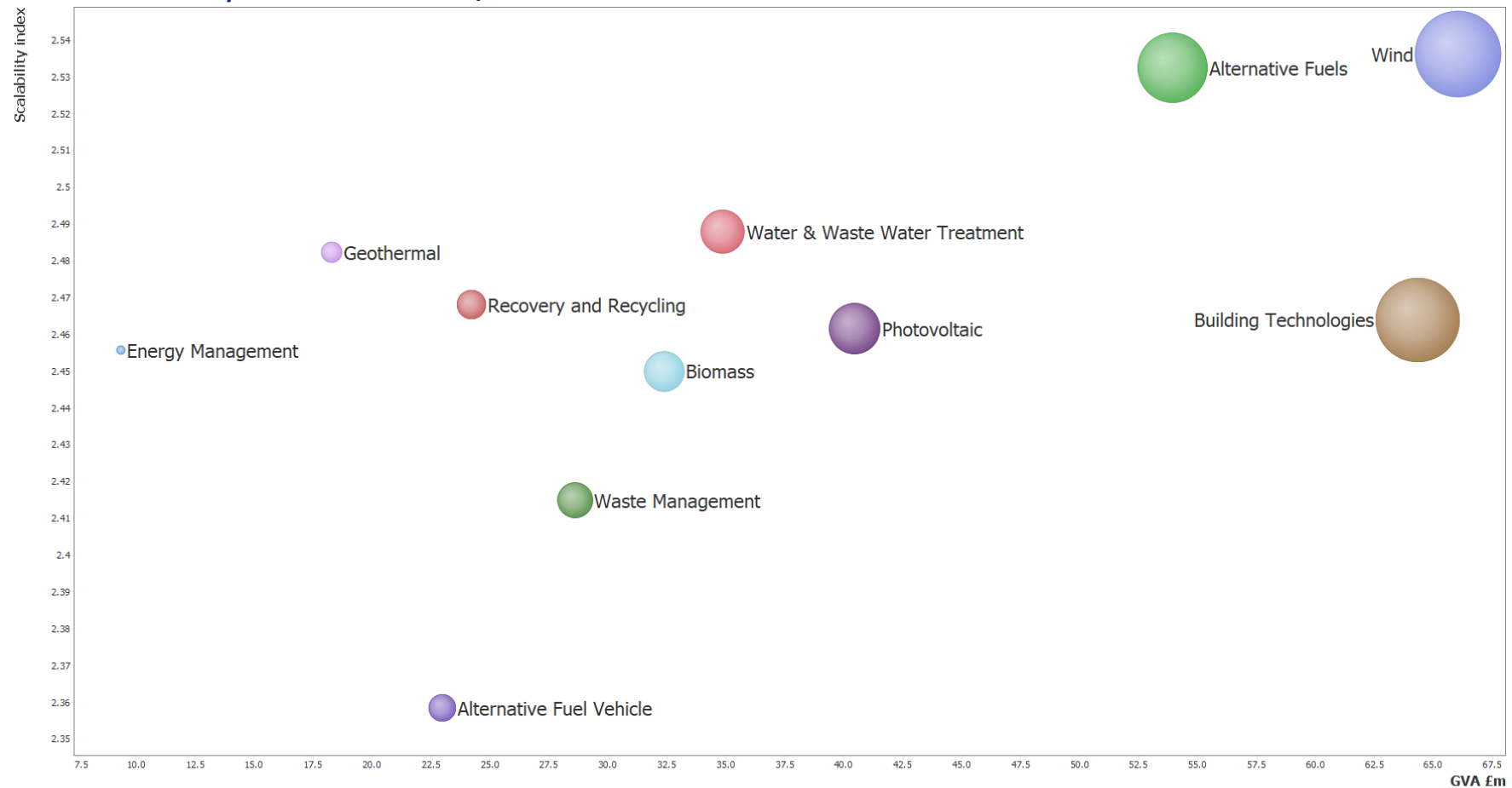
Stoke-on-Trent – Scalability Index vs. GVA for 2019/20



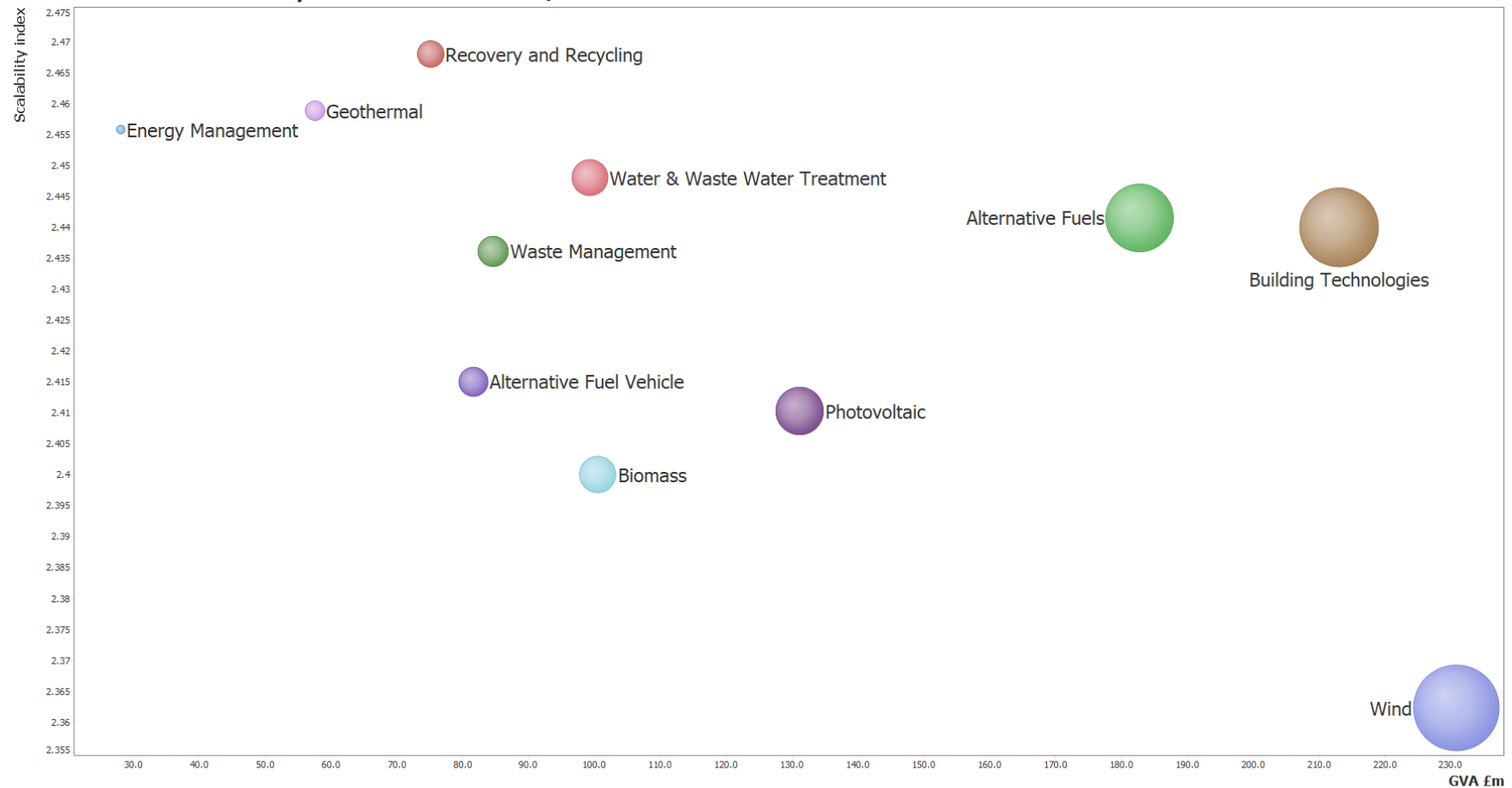
Stratford-on-Avon – Scalability Index vs. GVA for 2019/20



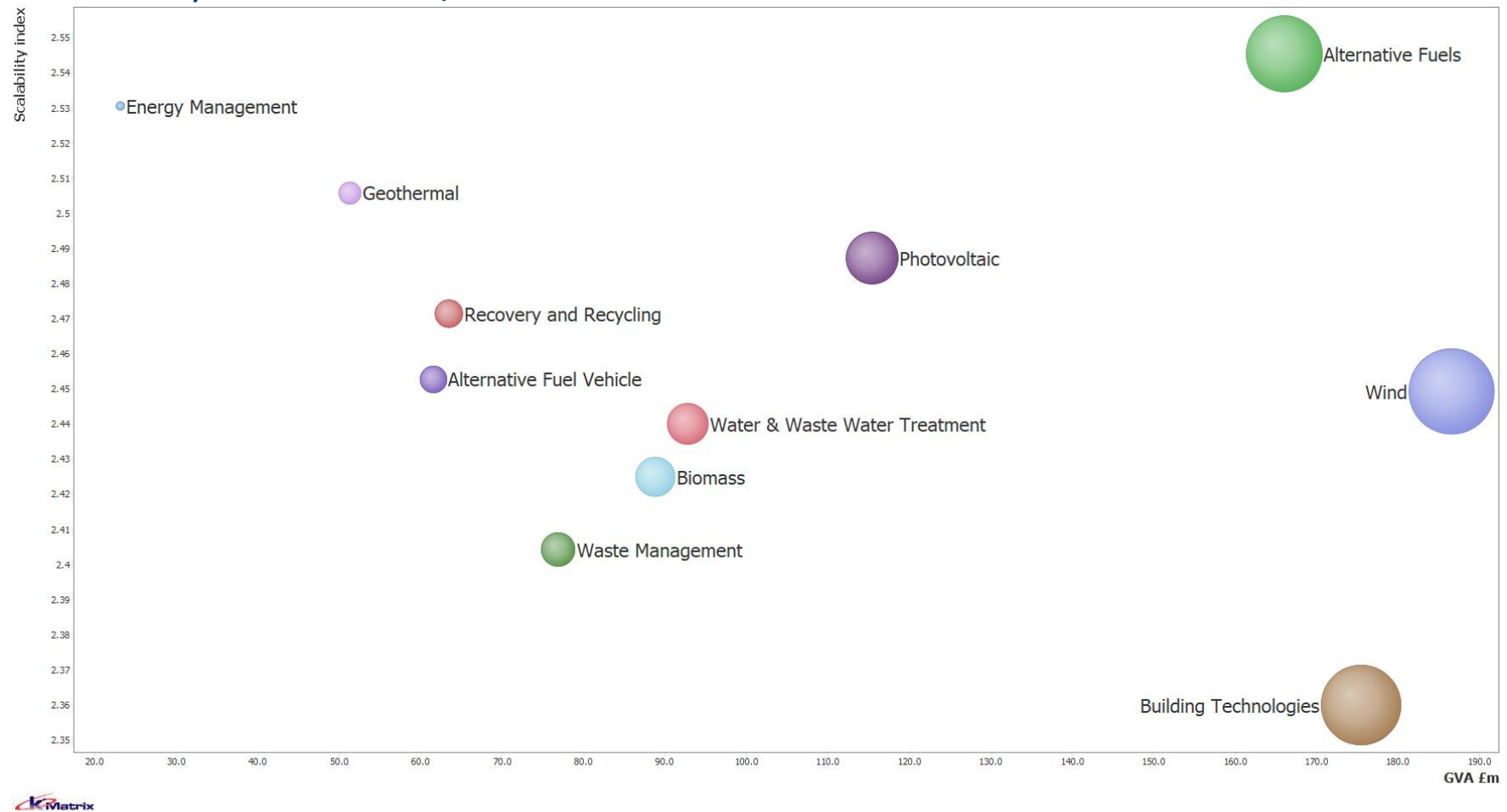
Tamworth – Scalability Index vs. GVA for 2019/20



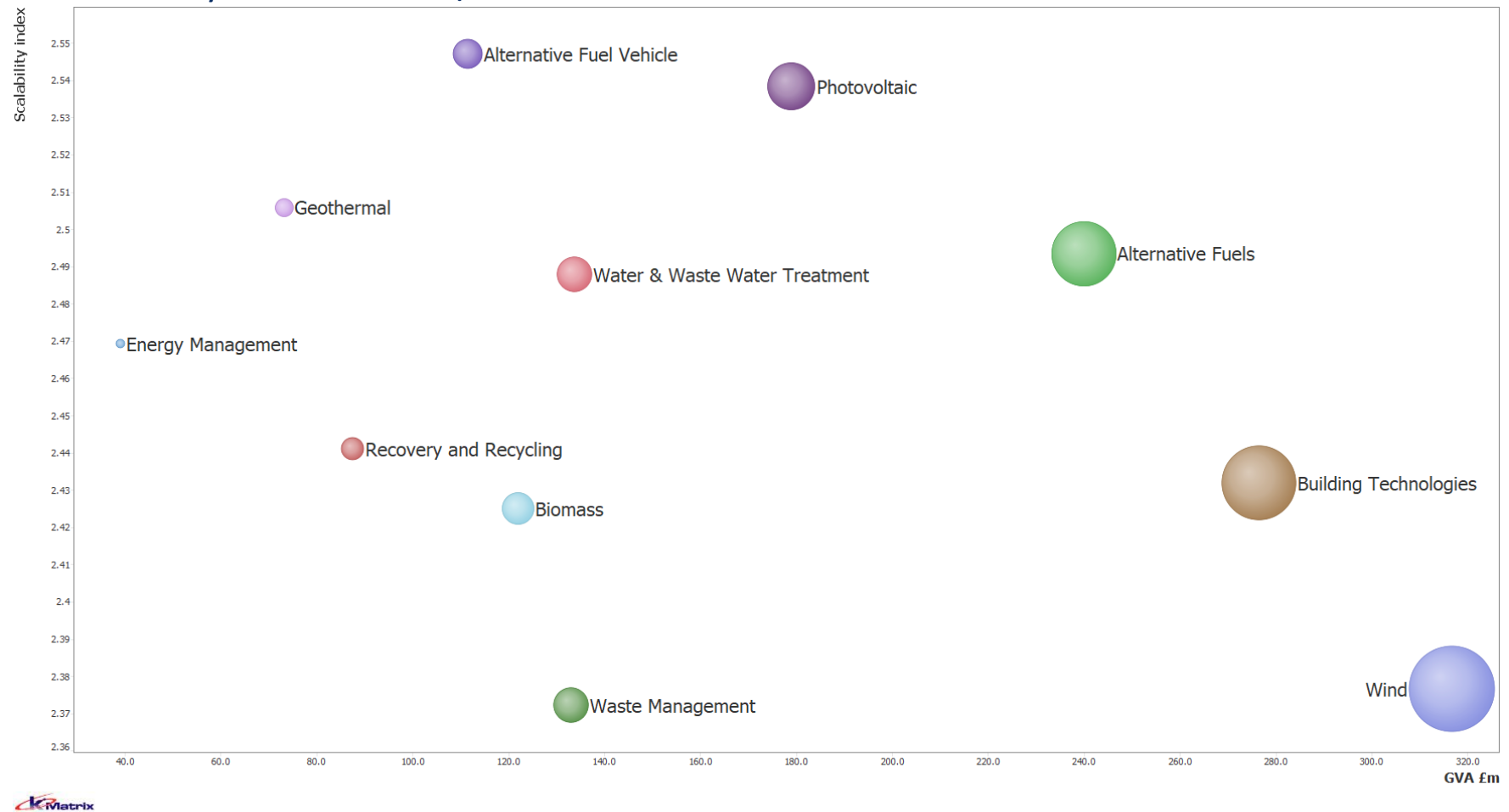
Telford & Wrekin – Scalability Index vs. GVA for 2019/20



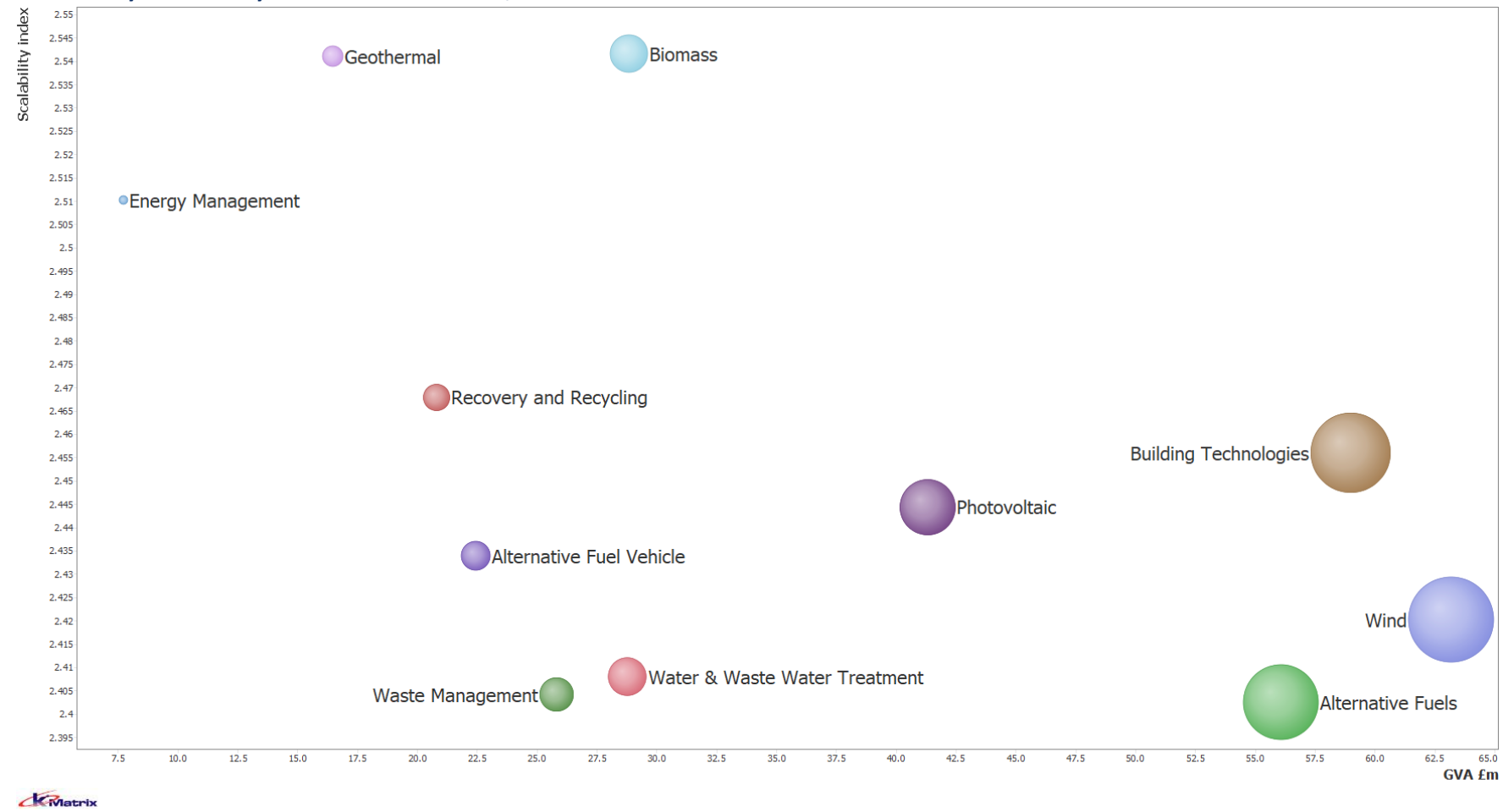
Walsall – Scalability Index vs. GVA for 2019/20



Warwick – Scalability Index vs. GVA for 2019/20



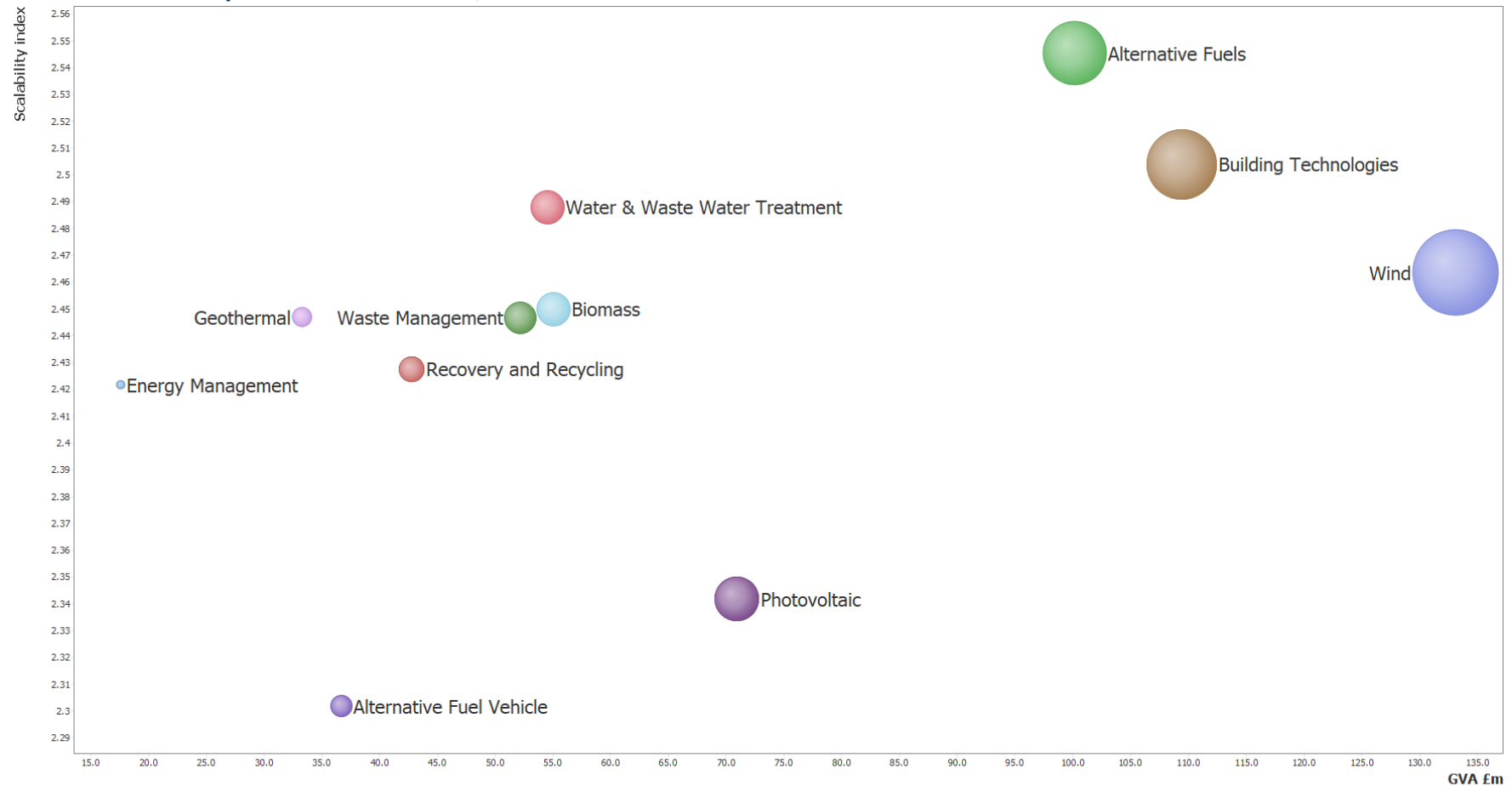
West Lindsey – Scalability Index vs. GVA for 2019/20



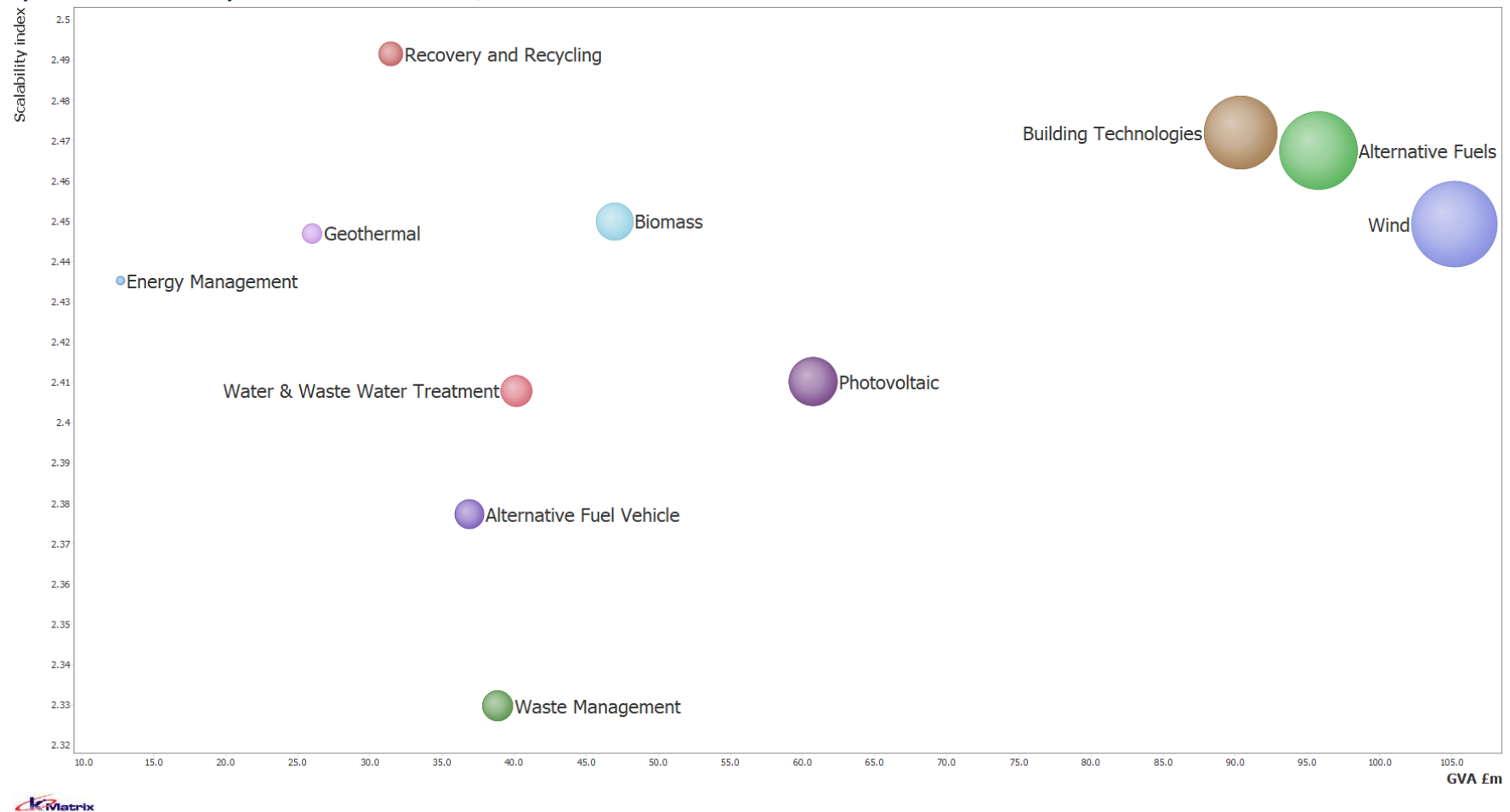
Wolverhampton – Scalability Index vs. GVA for 2019/20



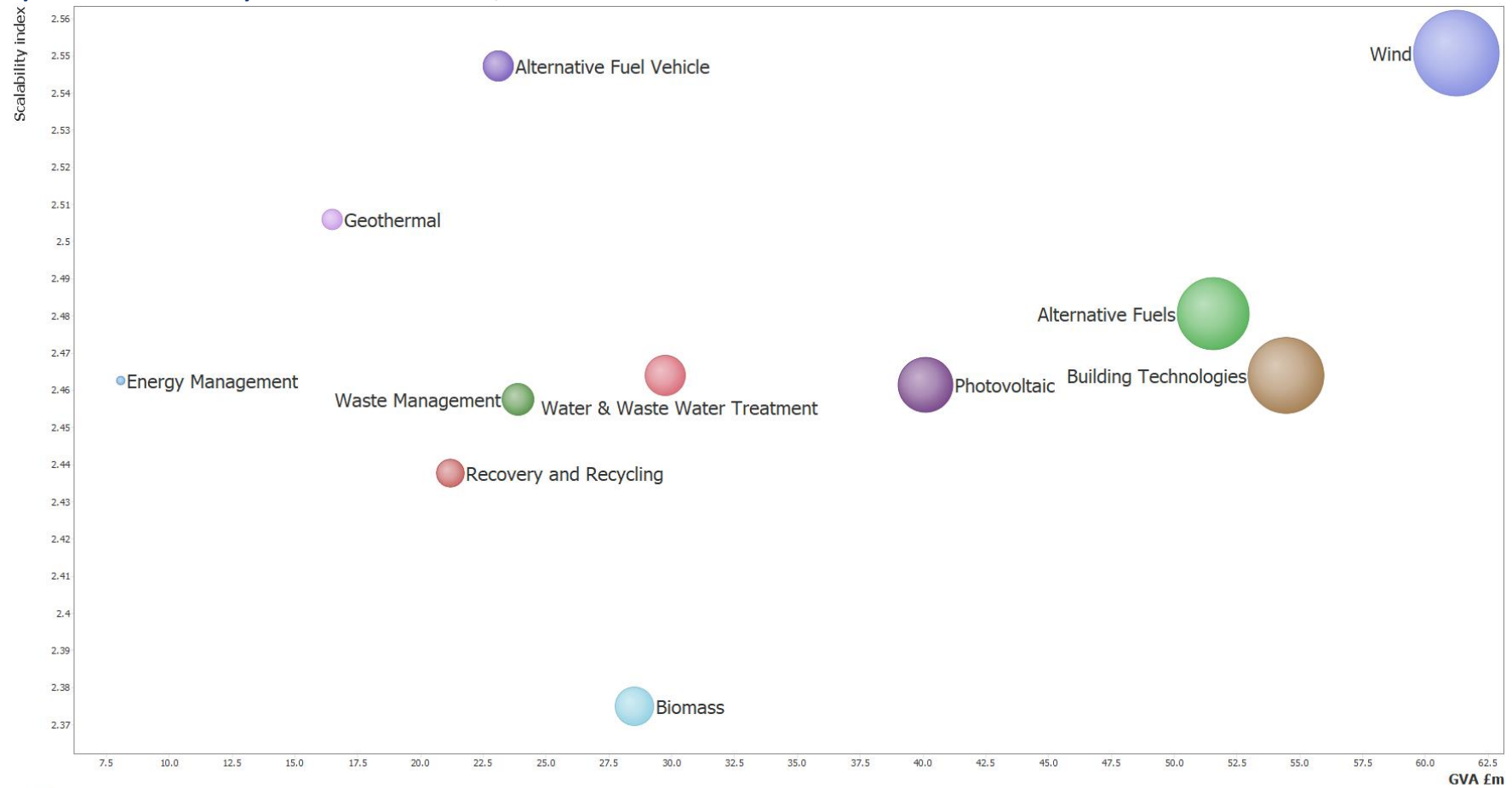
Worcester – Scalability Index vs. GVA for 2019/20



Wychavon – Scalability Index vs. GVA for 2019/20



Wyre Forest – Scalability Index vs. GVA for 2019/20



Appendix 5

LCEGS Current Employment, Skills Gaps and Forecasts for Net Zero 2030 and 2050 Scenarios for Top Level 2 Sub-sectors

Alternative Fuel Vehicle

SOC	Alternative Fuel Vehicle				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees		# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
		2019/20	Shortage as a % of Total Employees									
Technicians	80	36	45.5%	117	105	-10.2%	138	18.3%	163	40.1%	386	231.1%
Snr Management SME	144	33	22.8%	177	187	5.7%	246	39.5%	292	65.7%	696	294.1%
Supervisory	184	41	22.2%	225	240	6.4%	316	40.2%	372	65.0%	887	293.3%
Middle / Junior Management	180	41	23.0%	222	237	6.9%	309	39.1%	366	65.1%	862	288.5%
Designer / Developer	19	9	45.5%	28	25	-9.9%	33	18.8%	39	39.9%	92	230.7%
Clerical	111	1	0.5%	111	145	30.2%	191	71.0%	222	99.6%	532	378.0%
Self Employed	112	26	23.0%	137	147	6.9%	191	38.8%	225	63.6%	538	292.0%
Advisor or Agent	188	43	23.1%	232	246	5.9%	324	39.5%	380	64.0%	906	290.5%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	45	3	6.2%	48	59	24.2%	76	60.3%	91	91.8%	221	365.6%
Editor	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Industrial Researchers	296	34	11.5%	329	389	18.1%	507	53.8%	600	82.0%	1,426	332.8%
Scientist	31	14	45.3%	45	40	-10.2%	53	18.4%	62	39.4%	148	232.5%
Maintenance Engineer	258	36	13.8%	293	338	15.2%	440	50.1%	522	78.2%	1,232	320.2%
Civil Engineer	38	17	44.8%	54	49	-10.0%	64	18.0%	76	39.5%	182	233.7%
Production Engineer	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Power distribution Engineer	39	26	67.3%	65	51	-22.0%	67	2.4%	79	20.7%	188	187.1%
Construction Engineer	40	14	34.5%	54	52	-2.8%	69	27.6%	81	50.2%	193	258.8%
Sales Exec	206	46	22.5%	253	272	7.5%	356	41.0%	417	64.9%	1,000	295.8%
Marketing Personnel	212	49	23.1%	261	275	5.6%	365	39.9%	430	64.9%	1,018	290.6%
General Semi Skilled Worker	182	8	4.5%	190	238	24.9%	311	63.3%	369	93.8%	873	359.0%
General Labour	292	0	0.0%	292	383	31.2%	500	71.4%	591	102.7%	1,405	381.6%
Other Employees	205	23	11.4%	229	269	17.8%	352	54.0%	415	81.7%	988	332.3%
Administrative workers	149	7	4.6%	156	195	25.1%	256	63.9%	302	93.6%	715	357.7%
Total	3,010	507	16.8%	3,517	3,941	12.0%	5,162	46.8%	6,095	73.3%	14,488	311.9%

Alternative Fuels

SOC	Alternative Fuels				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	589	211	35.8%	800	767	-4.1%	1,015	26.8%	1,204	50.5%	2,828	253.5%
Snr Management SME	513	93	18.1%	606	670	10.5%	883	45.6%	1,036	70.8%	2,473	307.9%
Supervisory	640	116	18.2%	756	829	9.7%	1,094	44.7%	1,287	70.3%	3,068	305.8%
Middle / Junior Management	621	111	17.9%	733	811	10.7%	1,070	46.0%	1,261	72.1%	3,010	310.8%
Designer / Developer	108	38	35.2%	146	140	-4.4%	186	26.9%	218	48.6%	525	258.2%
Clerical	316	1	0.4%	317	417	31.7%	539	70.3%	639	101.8%	1,529	382.7%
Self Employed	171	32	18.6%	203	225	10.9%	292	44.0%	343	69.3%	822	305.2%
Advisor or Agent	14	3	18.9%	17	19	10.5%	24	43.6%	28	69.1%	68	306.5%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	494	25	5.1%	519	639	23.1%	845	62.6%	1,005	93.5%	2,370	356.2%
Editor	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Industrial Researchers	219	20	9.3%	240	282	17.7%	375	56.6%	445	86.0%	1,060	342.7%
Scientist	415	141	34.0%	556	539	-2.9%	711	27.9%	835	50.4%	1,989	258.1%
Maintenance Engineer	803	89	11.0%	891	1,049	17.7%	1,375	54.3%	1,629	82.8%	3,856	332.7%
Civil Engineer	3	1	37.1%	4	4	-4.9%	5	25.8%	6	46.2%	13	250.0%
Production Engineer	420	236	56.0%	656	543	-17.1%	725	10.5%	840	28.1%	2,016	207.3%
Power distribution Engineer	144	74	51.4%	217	187	-14.1%	245	12.6%	290	33.2%	685	215.1%
Construction Engineer	3	1	27.9%	4	4	1.2%	5	34.0%	6	57.7%	14	273.7%
Sales Exec	629	115	18.4%	744	825	10.8%	1,074	44.3%	1,262	69.5%	3,010	304.5%
Marketing Personnel	641	113	17.6%	754	837	11.1%	1,104	46.5%	1,292	71.4%	3,104	311.8%
General Semi Skilled Worker	837	30	3.5%	866	1,099	26.8%	1,437	65.9%	1,697	96.0%	4,034	365.7%
General Labour	1,139	0	0.0%	1,139	1,492	31.1%	1,966	72.7%	2,304	102.3%	5,489	382.1%
Other Employees	685	64	9.3%	748	891	19.0%	1,175	57.0%	1,382	84.6%	3,293	339.9%
Administrative workers	418	15	3.6%	433	546	26.2%	713	64.9%	839	93.9%	2,012	365.1%
Total	9,821	1,528	15.6%	11,349	12,815	12.9%	16,859	48.5%	19,849	74.9%	47,270	316.5%

Biomass

SOC	Biomass				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	338	78	23.0%	416	444	6.8%	580	39.4%	685	64.7%	1,635	293.1%
Snr Management SME	1,422	165	11.6%	1,587	1,856	16.9%	2,437	53.6%	2,875	81.2%	6,827	330.3%
Supervisory	1,437	164	11.4%	1,601	1,877	17.2%	2,478	54.8%	2,903	81.3%	6,948	333.9%
Middle / Junior Management	1,380	157	11.4%	1,537	1,804	17.4%	2,369	54.1%	2,794	81.8%	6,600	329.4%
Designer / Developer	159	37	23.2%	195	207	5.7%	274	40.2%	320	63.8%	763	290.4%
Clerical	711	2	0.2%	713	936	31.4%	1,226	72.0%	1,436	101.5%	3,432	381.5%
Self Employed	73	9	11.8%	81	95	17.1%	124	52.7%	146	80.0%	348	329.4%
Advisor or Agent	22	2	11.3%	24	29	17.6%	38	54.6%	44	81.1%	106	332.8%
Educator	0	0	11.4%	0	0	17.5%	0	54.0%	0	87.7%	0	327.6%
Specialist or Consultant	769	27	3.5%	796	1,011	27.0%	1,317	65.5%	1,549	94.7%	3,717	367.1%
Editor	21	0	2.3%	22	28	27.1%	37	68.3%	43	97.7%	102	369.5%
Industrial Researchers	28	2	5.8%	29	36	23.6%	48	62.7%	56	91.4%	134	353.8%
Scientist	43	10	22.2%	53	57	7.7%	75	40.8%	87	65.2%	206	288.8%
Maintenance Engineer	1,424	100	7.0%	1,524	1,862	22.2%	2,458	61.3%	2,875	88.7%	6,864	350.4%
Civil Engineer	22	5	23.0%	27	29	5.8%	38	39.6%	45	64.1%	107	291.1%
Production Engineer	210	71	33.8%	281	277	-1.6%	363	29.1%	426	51.5%	1,008	258.4%
Power distribution Engineer	687	235	34.2%	923	899	-2.5%	1,184	28.4%	1,394	51.1%	3,308	258.5%
Construction Engineer	21	4	17.2%	25	28	11.9%	36	46.8%	43	72.2%	102	311.2%
Sales Exec	675	77	11.4%	753	887	17.8%	1,155	53.5%	1,366	81.6%	3,256	332.6%
Marketing Personnel	697	79	11.4%	777	912	17.4%	1,194	53.7%	1,406	81.0%	3,346	330.8%
General Semi Skilled Worker	1,404	32	2.3%	1,436	1,831	27.5%	2,409	67.8%	2,851	98.6%	6,790	372.9%
General Labour	1,472	0	0.0%	1,472	1,921	30.5%	2,528	71.8%	2,968	101.7%	7,093	382.0%
Other Employees	1,878	109	5.8%	1,987	2,457	23.6%	3,209	61.5%	3,812	91.8%	9,049	355.4%
Administrative workers	714	16	2.3%	730	928	27.2%	1,224	67.7%	1,451	98.8%	3,436	370.8%
Total	15,608	1,381	8.8%	16,989	20,409	20.1%	26,801	57.8%	31,576	85.9%	75,177	342.5%

Building Technologies

SOC	Building Technologies				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	646	88	13.6%	734	840	14.4%	1,104	50.4%	1,300	77.1%	3,096	321.7%
Snr Management SME	1,647	111	6.7%	1,757	2,147	22.2%	2,821	60.5%	3,340	90.1%	7,906	349.9%
Supervisory	1,641	112	6.8%	1,753	2,156	23.0%	2,825	61.1%	3,328	89.8%	7,872	349.0%
Middle / Junior Management	1,589	109	6.8%	1,698	2,083	22.7%	2,721	60.3%	3,191	87.9%	7,689	352.9%
Designer / Developer	187	26	13.7%	213	244	14.6%	320	50.4%	377	77.0%	896	321.3%
Clerical	842	1	0.1%	843	1,103	30.8%	1,441	70.9%	1,705	102.2%	4,002	374.6%
Self Employed	190	13	6.8%	203	248	22.0%	327	61.1%	384	88.9%	914	349.9%
Advisor or Agent	217	15	6.9%	232	287	23.4%	374	61.1%	440	89.6%	1,047	350.9%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	972	20	2.1%	992	1,282	29.2%	1,681	69.5%	1,960	97.5%	4,645	368.2%
Editor	7	0	1.4%	7	9	28.6%	12	69.5%	14	99.0%	33	374.2%
Industrial Researchers	398	14	3.5%	411	517	25.8%	682	65.8%	805	95.6%	1,908	363.7%
Scientist	56	8	13.9%	63	73	14.8%	95	50.7%	112	76.4%	268	322.7%
Maintenance Engineer	1,664	68	4.1%	1,732	2,164	24.9%	2,860	65.1%	3,377	94.9%	7,998	361.7%
Civil Engineer	97	13	13.9%	110	127	14.9%	166	50.3%	196	78.0%	466	322.9%
Production Engineer	203	42	20.7%	245	265	8.3%	350	42.8%	411	67.9%	982	300.8%
Power distribution Engineer	853	176	20.6%	1,029	1,116	8.4%	1,460	41.9%	1,733	68.4%	4,110	299.4%
Construction Engineer	162	16	10.1%	179	213	19.1%	279	56.0%	327	82.9%	783	337.5%
Sales Exec	749	51	6.8%	799	975	21.9%	1,285	60.8%	1,524	90.7%	3,583	348.3%
Marketing Personnel	768	52	6.8%	820	1,011	23.3%	1,322	61.2%	1,564	90.7%	3,686	349.4%
General Semi Skilled Worker	1,708	24	1.4%	1,731	2,226	28.6%	2,941	69.9%	3,449	99.2%	8,170	371.9%
General Labour	3,162	0	0.0%	3,162	4,136	30.8%	5,418	71.3%	6,390	102.1%	15,196	380.5%
Other Employees	2,103	72	3.4%	2,175	2,749	26.4%	3,618	66.3%	4,265	96.1%	10,101	364.3%
Administrative workers	933	13	1.4%	946	1,230	30.0%	1,601	69.2%	1,878	98.6%	4,486	374.3%
Total	20,794	1,044	5.0%	21,838	27,200	24.6%	35,706	63.5%	42,069	92.6%	99,837	357.2%

Energy Management

SOC	Energy Management				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	106	48	45.7%	154	139	-10.1%	182	17.8%	214	38.5%	509	229.7%
Snr Management SME	203	46	22.5%	248	264	6.3%	347	39.7%	411	65.7%	975	292.8%
Supervisory	218	49	22.5%	267	286	7.0%	372	39.1%	440	64.7%	1,048	292.4%
Middle / Junior Management	211	48	22.8%	259	275	6.3%	362	40.0%	426	64.6%	1,015	292.1%
Designer / Developer	55	25	46.1%	80	72	-10.4%	93	16.3%	111	38.5%	264	230.2%
Clerical	110	1	0.5%	110	144	30.2%	188	70.5%	221	100.3%	527	377.4%
Self Employed	53	12	22.5%	65	69	7.1%	91	40.5%	106	64.1%	253	290.6%
Advisor or Agent	45	10	22.7%	56	60	6.9%	78	39.9%	91	64.0%	218	291.0%
Educator	1	0	22.4%	2	2	6.7%	2	40.5%	3	62.5%	7	288.7%
Specialist or Consultant	124	8	6.7%	133	164	23.3%	214	61.0%	250	88.2%	601	353.0%
Editor	20	1	4.4%	21	26	25.5%	35	64.1%	41	93.7%	97	359.6%
Industrial Researchers	40	5	11.6%	45	53	17.3%	69	54.2%	82	81.4%	193	330.0%
Scientist	22	10	46.5%	33	29	-10.9%	39	17.7%	46	38.6%	107	225.3%
Maintenance Engineer	264	36	13.7%	300	346	15.1%	453	50.9%	533	77.6%	1,269	322.6%
Civil Engineer	39	18	45.3%	57	51	-10.1%	68	18.5%	80	39.5%	187	227.4%
Production Engineer	47	33	69.8%	79	61	-23.2%	80	1.0%	95	19.6%	224	182.9%
Power distribution Engineer	123	84	68.4%	208	160	-22.7%	213	2.5%	249	19.8%	594	185.9%
Construction Engineer	45	16	34.8%	60	58	-3.4%	77	27.5%	90	49.5%	215	256.2%
Sales Exec	126	29	22.7%	155	165	6.3%	217	40.2%	255	64.8%	608	292.2%
Marketing Personnel	120	27	22.2%	147	157	6.8%	206	40.0%	243	65.0%	579	294.1%
General Semi Skilled Worker	244	11	4.5%	255	320	25.2%	419	64.2%	494	93.3%	1,172	358.8%
General Labour	373	0	0.0%	373	490	31.3%	640	71.3%	754	101.9%	1,793	380.0%
Other Employees	290	33	11.5%	324	380	17.3%	500	54.5%	584	80.6%	1,401	332.9%
Administrative workers	131	6	4.6%	137	171	24.4%	225	64.1%	265	92.9%	632	360.7%
Total	3,013	556	18.5%	3,569	3,940	10.4%	5,169	44.8%	6,082	70.4%	14,486	305.9%

Geothermal

SOC	Geothermal				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	169	77	45.3%	245	221	-10.1%	289	17.9%	340	38.8%	810	230.2%
Snr Management SME	678	156	23.0%	834	888	6.4%	1,161	39.2%	1,367	63.9%	3,259	290.7%
Supervisory	674	153	22.7%	827	877	6.1%	1,156	39.8%	1,358	64.2%	3,243	292.3%
Middle / Junior Management	656	149	22.8%	805	856	6.3%	1,120	39.1%	1,328	64.9%	3,149	291.1%
Designer / Developer	74	34	45.4%	108	97	-10.0%	127	17.7%	150	38.8%	356	229.6%
Clerical	338	2	0.5%	339	444	30.7%	580	70.9%	686	102.2%	1,623	378.1%
Self Employed	39	9	23.0%	49	51	6.0%	68	40.1%	79	63.6%	190	291.9%
Advisor or Agent	35	8	22.8%	44	47	7.0%	61	39.8%	71	64.0%	170	290.5%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	343	24	6.9%	367	449	22.2%	590	60.5%	692	88.4%	1,661	352.4%
Editor	18	1	4.5%	19	24	25.6%	31	64.3%	37	93.6%	88	358.4%
Industrial Researchers	25	3	11.3%	27	32	17.0%	42	54.6%	50	81.5%	118	332.1%
Scientist	19	9	45.0%	28	25	-10.0%	33	18.6%	39	40.0%	93	231.6%
Maintenance Engineer	704	97	13.8%	802	920	14.8%	1,198	49.4%	1,419	77.0%	3,386	322.3%
Civil Engineer	33	15	45.6%	48	43	-10.3%	57	17.4%	67	38.9%	159	230.0%
Production Engineer	112	77	68.8%	190	147	-22.4%	193	1.6%	227	19.7%	537	183.2%
Power distribution Engineer	338	228	67.5%	566	441	-22.0%	580	2.5%	682	20.6%	1,620	186.4%
Construction Engineer	29	10	33.6%	39	38	-1.9%	49	28.4%	58	51.1%	139	261.0%
Sales Exec	346	79	22.8%	425	453	6.6%	592	39.1%	698	64.1%	1,675	293.7%
Marketing Personnel	346	79	22.8%	425	453	6.4%	593	39.4%	700	64.6%	1,665	291.5%
General Semi Skilled Worker	693	31	4.5%	724	904	24.9%	1,191	64.5%	1,404	93.9%	3,347	362.3%
General Labour	1,031	0	0.0%	1,031	1,350	31.0%	1,767	71.5%	2,076	101.5%	4,970	382.3%
Other Employees	888	100	11.2%	988	1,158	17.2%	1,522	54.0%	1,794	81.6%	4,240	329.2%
Administrative workers	349	16	4.5%	365	457	25.3%	599	64.2%	704	93.0%	1,682	360.8%
Total	7,939	1,355	17.1%	9,295	10,375	11.6%	13,598	46.3%	16,028	72.4%	38,181	310.8%

Photovoltaic

SOC	Photovoltaic				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	554	49	8.8%	603	725	20.3%	949	57.4%	1,125	86.6%	2,664	341.9%
Snr Management SME	1,710	76	4.4%	1,786	2,247	25.8%	2,933	64.2%	3,472	94.4%	8,195	358.9%
Supervisory	1,701	75	4.4%	1,776	2,220	25.0%	2,942	65.6%	3,429	93.1%	8,215	362.6%
Middle / Junior Management	1,649	71	4.3%	1,721	2,161	25.6%	2,832	64.6%	3,330	93.5%	7,901	359.2%
Designer / Developer	120	10	8.7%	131	158	20.9%	206	57.6%	244	86.7%	577	341.5%
Clerical	846	1	0.1%	847	1,102	30.2%	1,446	70.8%	1,711	102.1%	4,043	377.6%
Self Employed	91	4	4.5%	95	118	24.2%	155	63.8%	183	93.3%	436	359.9%
Advisor or Agent	11	1	4.5%	12	15	24.5%	20	65.3%	23	93.9%	55	360.9%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	784	10	1.3%	794	1,029	29.6%	1,334	68.0%	1,587	99.9%	3,750	372.3%
Editor	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Industrial Researchers	58	1	2.3%	60	76	27.9%	100	68.5%	117	97.3%	281	371.9%
Scientist	2	0	9.1%	2	2	19.8%	3	58.6%	4	84.4%	9	343.2%
Maintenance Engineer	1,722	46	2.7%	1,768	2,257	27.7%	2,969	67.9%	3,490	97.4%	8,268	367.7%
Civil Engineer	43	4	8.9%	47	57	19.9%	74	57.3%	88	86.7%	210	343.6%
Production Engineer	224	30	13.4%	254	293	15.4%	384	51.3%	453	78.7%	1,078	325.3%
Power distribution Engineer	855	116	13.5%	971	1,117	15.1%	1,467	51.1%	1,711	76.3%	4,108	323.3%
Construction Engineer	91	6	6.7%	97	119	22.1%	157	61.1%	185	89.9%	440	351.9%
Sales Exec	806	35	4.4%	841	1,051	25.0%	1,380	64.2%	1,631	94.0%	3,861	359.2%
Marketing Personnel	829	37	4.4%	866	1,085	25.3%	1,425	64.6%	1,677	93.7%	3,981	359.6%
General Semi Skilled Worker	1,770	16	0.9%	1,786	2,311	29.4%	3,046	70.6%	3,562	99.5%	8,423	371.7%
General Labour	2,284	0	0.0%	2,284	2,980	30.5%	3,925	71.9%	4,626	102.5%	10,969	380.3%
Other Employees	2,190	48	2.2%	2,238	2,874	28.4%	3,716	66.1%	4,409	97.0%	10,532	370.7%
Administrative workers	885	8	0.9%	893	1,156	29.4%	1,517	69.9%	1,774	98.6%	4,237	374.4%
Total	19,226	642	3.3%	19,869	25,154	26.6%	32,981	66.0%	38,833	95.5%	92,234	364.2%

Recovery and Recycling

SOC	Recovery and Recycling				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	389	144	36.9%	533	508	-4.6%	667	25.3%	788	48.0%	1,869	251.0%
Snr Management SME	455	84	18.5%	539	594	10.2%	777	44.1%	915	69.6%	2,185	305.2%
Supervisory	485	91	18.8%	576	634	10.1%	834	44.8%	975	69.4%	2,326	303.9%
Middle / Junior Management	469	89	19.0%	558	610	9.3%	804	44.0%	949	70.0%	2,260	304.6%
Designer / Developer	334	123	36.8%	457	437	-4.3%	574	25.5%	672	47.0%	1,606	251.3%
Clerical	240	1	0.4%	241	315	30.6%	414	71.6%	487	102.0%	1,148	376.0%
Self Employed	118	22	18.4%	140	155	10.5%	203	44.9%	239	70.7%	570	307.3%
Advisor or Agent	42	8	18.8%	50	54	9.8%	72	44.3%	84	69.1%	199	301.7%
Educator	2	0	18.5%	2	2	10.8%	3	43.3%	3	70.3%	8	302.2%
Specialist or Consultant	390	22	5.7%	412	507	22.9%	666	61.5%	789	91.4%	1,882	356.4%
Editor	19	1	3.7%	19	24	26.1%	32	64.9%	38	96.1%	89	361.9%
Industrial Researchers	100	9	9.1%	109	131	20.0%	171	57.3%	202	85.3%	479	339.9%
Scientist	90	33	37.0%	123	118	-4.4%	154	25.3%	181	47.3%	433	251.5%
Maintenance Engineer	607	67	11.0%	674	795	18.0%	1,041	54.5%	1,229	82.4%	2,919	333.2%
Civil Engineer	173	63	36.5%	236	226	-4.1%	296	25.7%	349	48.3%	829	251.9%
Production Engineer	206	114	55.5%	320	269	-15.8%	352	10.1%	416	30.1%	991	209.8%
Power distribution Engineer	322	180	55.8%	501	419	-16.3%	550	9.7%	648	29.2%	1,548	208.8%
Construction Engineer	186	52	27.8%	238	243	2.2%	320	34.6%	376	58.2%	894	275.8%
Sales Exec	389	72	18.4%	461	509	10.3%	669	45.1%	784	70.0%	1,869	305.2%
Marketing Personnel	320	59	18.4%	380	421	11.0%	550	44.8%	649	70.9%	1,537	304.9%
General Semi Skilled Worker	788	29	3.7%	817	1,033	26.4%	1,356	66.0%	1,591	94.7%	3,781	362.6%
General Labour	807	0	0.0%	807	1,053	30.4%	1,387	71.8%	1,630	101.9%	3,881	380.8%
Other Employees	579	53	9.1%	632	756	19.6%	997	57.7%	1,176	86.1%	2,788	340.9%
Administrative workers	327	12	3.7%	340	426	25.5%	561	65.1%	664	95.4%	1,583	366.0%
Total	7,838	1,327	16.9%	9,165	10,240	11.7%	13,449	46.7%	15,836	72.8%	37,673	311.0%

Waste Management

SOC	Waste Management				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	329	44	13.5%	373	430	15.1%	563	50.8%	666	78.3%	1,584	324.1%
Snr Management SME	603	42	7.0%	645	787	22.0%	1,039	61.1%	1,223	89.5%	2,903	349.8%
Supervisory	675	47	7.0%	722	884	22.5%	1,159	60.5%	1,364	88.9%	3,239	348.6%
Middle / Junior Management	658	45	6.8%	704	860	22.2%	1,129	60.5%	1,328	88.8%	3,164	349.8%
Designer / Developer	137	18	13.4%	155	178	14.8%	235	51.7%	276	78.1%	654	322.8%
Clerical	353	0	0.1%	354	462	30.7%	609	72.0%	715	102.0%	1,692	378.1%
Self Employed	178	12	6.8%	190	232	22.5%	304	60.3%	360	89.7%	853	350.0%
Advisor or Agent	231	16	6.7%	246	303	22.9%	396	60.8%	463	88.1%	1,110	351.1%
Educator	14	1	6.5%	15	19	23.7%	24	62.5%	29	90.4%	68	351.6%
Specialist or Consultant	363	8	2.1%	371	474	27.9%	622	67.9%	734	98.1%	1,739	369.0%
Editor	37	0	1.3%	38	49	29.7%	64	70.8%	75	98.4%	179	374.6%
Industrial Researchers	311	10	3.3%	321	405	26.1%	534	66.1%	627	95.2%	1,493	364.7%
Scientist	60	8	13.4%	67	78	15.0%	102	51.6%	120	77.8%	287	325.4%
Maintenance Engineer	829	34	4.1%	863	1,084	25.7%	1,421	64.7%	1,672	93.8%	3,985	362.0%
Civil Engineer	123	17	13.6%	140	161	14.7%	211	50.5%	249	77.6%	593	323.4%
Production Engineer	141	29	20.3%	169	184	8.5%	240	41.9%	285	68.1%	678	300.3%
Power distribution Engineer	403	85	20.9%	488	529	8.3%	692	41.9%	816	67.2%	1,939	297.3%
Construction Engineer	167	17	10.3%	185	219	18.7%	287	55.7%	338	83.0%	802	334.8%
Sales Exec	325	22	6.8%	347	428	23.3%	556	60.1%	655	88.9%	1,567	351.5%
Marketing Personnel	314	21	6.8%	335	411	22.5%	539	60.7%	635	89.3%	1,512	350.8%
General Semi Skilled Worker	750	10	1.4%	760	980	29.0%	1,286	69.2%	1,513	99.1%	3,603	374.2%
General Labour	466	0	0.0%	466	609	30.8%	798	71.3%	941	102.2%	2,238	380.7%
Other Employees	949	33	3.5%	982	1,236	25.9%	1,627	65.7%	1,918	95.3%	4,561	364.6%
Administrative workers	442	6	1.4%	448	579	29.1%	761	69.7%	889	98.3%	2,117	372.3%
Total	8,858	526	5.9%	9,384	11,579	23.4%	15,198	62.0%	17,890	90.6%	42,562	353.6%

Water and Waste Water Treatment

SOC	Water & Waste Water Treatment				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	485	45	9.2%	530	635	19.8%	835	57.4%	978	84.5%	2,328	339.2%
Snr Management SME	824	38	4.6%	862	1,082	25.5%	1,423	65.0%	1,664	93.0%	3,972	360.6%
Supervisory	859	38	4.5%	898	1,114	24.1%	1,473	64.1%	1,738	93.5%	4,136	360.7%
Middle / Junior Management	826	36	4.4%	862	1,078	25.2%	1,414	64.1%	1,672	94.1%	3,955	359.0%
Designer / Developer	192	18	9.3%	210	252	19.9%	330	57.2%	388	84.8%	924	339.9%
Clerical	425	0	0.1%	425	555	30.6%	731	72.1%	855	101.2%	2,042	380.5%
Self Employed	225	10	4.5%	236	292	24.1%	388	64.8%	456	93.6%	1,083	360.0%
Advisor or Agent	30	1	4.6%	32	40	25.1%	52	63.6%	61	92.2%	145	358.1%
Educator	1	0	4.6%	1	1	24.6%	2	64.7%	2	92.9%	4	361.4%
Specialist or Consultant	473	6	1.4%	480	622	29.8%	811	69.0%	954	99.0%	2,285	376.3%
Editor	15	0	0.9%	15	19	29.4%	25	69.2%	30	100.4%	70	372.8%
Industrial Researchers	36	1	2.3%	37	47	27.5%	61	67.4%	73	97.9%	172	369.5%
Scientist	16	1	9.4%	17	20	19.0%	27	56.1%	32	85.7%	75	337.5%
Maintenance Engineer	1,145	31	2.7%	1,176	1,492	26.9%	1,967	67.3%	2,319	97.2%	5,491	367.0%
Civil Engineer	135	12	9.2%	148	176	19.4%	232	57.3%	273	85.1%	649	339.5%
Production Engineer	246	34	13.6%	280	320	14.5%	423	51.1%	498	77.9%	1,184	323.2%
Power distribution Engineer	537	74	13.9%	611	704	15.2%	920	50.5%	1,085	77.7%	2,579	322.2%
Construction Engineer	203	14	6.8%	217	265	22.4%	349	60.9%	409	88.8%	976	350.2%
Sales Exec	365	17	4.6%	382	482	25.9%	630	64.9%	736	92.4%	1,767	362.2%
Marketing Personnel	367	17	4.6%	384	483	25.7%	633	64.5%	739	92.3%	1,767	359.5%
General Semi Skilled Worker	988	9	0.9%	997	1,292	29.6%	1,696	70.1%	1,995	100.1%	4,755	377.0%
General Labour	513	0	0.0%	513	673	31.1%	879	71.3%	1,035	101.8%	2,464	380.3%
Other Employees	1,162	26	2.3%	1,188	1,520	27.9%	1,978	66.4%	2,352	97.9%	5,585	370.0%
Administrative workers	509	5	0.9%	514	664	29.3%	871	69.6%	1,027	100.0%	2,448	376.8%
Total	10,578	435	4.1%	11,013	13,829	25.6%	18,149	64.8%	21,371	94.1%	50,856	361.8%

Wind

SOC	Wind				Net Zero by 2030				Net Zero by 2050			
	Current Employment				Worst Case Scenario		Best Case Scenario		Worst Case Scenario		Best Case Scenario	
	# Employees 2019/20	Shortage of Employees 2019/20	Shortage as a % of Total Employees	# Employees if Skills Gap Filled	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2030	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)	Estimated # Employees Needed to Reach Net Zero by 2050	Growth in Employees Required (assumes no skills gap)
Technicians	829	111	13.4%	940	1,084	15.3%	1,417	50.8%	1,673	78.0%	3,978	323.2%
Snr Management SME	2,566	179	7.0%	2,746	3,363	22.5%	4,391	59.9%	5,180	88.7%	12,257	346.4%
Supervisory	2,630	181	6.9%	2,811	3,425	21.9%	4,498	60.0%	5,345	90.2%	12,664	350.5%
Middle / Junior Management	2,565	175	6.8%	2,740	3,342	22.0%	4,399	60.6%	5,142	87.7%	12,368	351.4%
Designer / Developer	123	17	13.8%	140	162	15.2%	211	50.1%	249	77.2%	595	323.5%
Clerical	1,310	2	0.1%	1,312	1,715	30.7%	2,248	71.3%	2,654	102.2%	6,298	379.9%
Self Employed	201	13	6.4%	214	264	23.5%	346	61.8%	404	89.0%	962	349.8%
Advisor or Agent	22	1	6.8%	23	28	21.0%	38	61.9%	44	89.5%	106	352.9%
Educator	0	0	0.0%	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Specialist or Consultant	1,179	24	2.1%	1,203	1,539	27.9%	2,017	67.7%	2,394	99.0%	5,646	369.4%
Editor	3	0	1.3%	3	4	29.9%	5	72.8%	6	99.5%	14	365.2%
Industrial Researchers	29	1	3.5%	30	37	25.8%	50	67.6%	57	92.1%	137	363.4%
Scientist	6	1	13.5%	7	8	17.2%	10	51.9%	12	76.6%	28	332.8%
Maintenance Engineer	3,003	125	4.2%	3,128	3,924	25.4%	5,153	64.7%	6,088	94.6%	14,406	360.5%
Civil Engineer	97	13	13.3%	110	128	15.8%	166	51.0%	197	78.4%	468	324.7%
Production Engineer	436	88	20.2%	524	570	8.7%	751	43.3%	880	67.9%	2,102	301.1%
Power distribution Engineer	1,359	271	20.0%	1,631	1,784	9.4%	2,330	42.9%	2,773	70.0%	6,533	300.6%
Construction Engineer	297	30	10.3%	327	390	19.1%	508	55.3%	602	84.0%	1,428	336.4%
Sales Exec	1,171	79	6.8%	1,250	1,527	22.2%	2,010	60.8%	2,371	89.7%	5,641	351.3%
Marketing Personnel	1,201	81	6.7%	1,281	1,560	21.7%	2,068	61.4%	2,404	87.6%	5,784	351.5%
General Semi Skilled Worker	2,692	37	1.4%	2,729	3,514	28.8%	4,625	69.4%	5,449	99.6%	13,021	377.1%
General Labour	3,185	0	0.0%	3,185	4,180	31.2%	5,472	71.8%	6,422	101.6%	15,330	381.3%
Other Employees	3,695	126	3.4%	3,821	4,823	26.2%	6,353	66.3%	7,457	95.2%	17,836	366.8%
Administrative workers	1,403	19	1.3%	1,421	1,836	29.2%	2,404	69.1%	2,826	98.8%	6,770	376.3%
Total	30,001	1,575	5.3%	31,577	39,207	24.2%	51,470	63.0%	60,627	92.0%	144,371	357.2%